

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Jeff EDER

Serial No.: 10/748,890

Filed: December 30, 2003

For: A market value matrix

Group Art Unit: 3624

Examiner: Thomas Mansfield

**Brief on Appeal**

The Appellant respectfully appeals the rejection of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9, claim 10, claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18, claim 19, claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 in the August 19, 2009 Office Action for the above referenced application. The Table of Contents is on page 2 of this paper.

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### **1. Real party in interest**

Asset Reliance, Inc. (dba Asset Trust, Inc.) is the Appellant of 100% interest in the above referenced patent application.

### **2. Related appeals**

None.

### **3. Status of Claims**

Claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9, claim 10, claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18, claim 19, claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 and are the subject of this appeal. Claims 20, 21 and 22 are withdrawn because of a restriction requirement.

### **4. Status of Amendments**

There are no amendments pending.

### **5. Summary of Claimed Subject Matter**

One embodiment of a market value matrix according to the present invention is best depicted in Figure 1 of the specification for the instant application. Figure 1 gives an overview of the four major processing steps which include using a machine (100) to: integrate data from a plurality of systems (200), prepare data for use in processing (300), analyze the data (400) and review results of the results and produce output (500). The support in the specification for each claim is summarized below.

**Independent Claim 1** - A first embodiment of the market value matrix is exemplified in independent claim 1 where a machine (100) integrates and prepares data from organization databases, external databases and the Internet for use in processing and uses the prepared data to develop a matrix of market value that identifies a contribution of one or more elements of value and one or more external factors to an organization value by a segment of value. The market value matrix is then used to complete simulations as required to measure risks to organization financial performance. A set of changes that will optimize organization risk, return and value are then identified. Support for the specific steps contained in the claim can be found in the specification and drawings as detailed below:

*a) a plurality of computers connected by a network each with a processor having circuitry to execute instructions; a storage device available to each processor with sequences of instructions stored therein* - the computer system (100) is described in FIG. 3, reference

numbers 100, 110, 111, 112, 113, 114, 115, 116, 117, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 130, 131, 132, 133, 134, 135, 136, 137 and 138 and line 26, page 18 through line 24, page 20 of the specification.

- b) establish a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization and a plurality of processing stages where each matrix cell is defined by a segment of value and an element of value or an external factor and integrate data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions* – the preparation of data is described in FIG. 4, reference number 201, FIG. 5A, reference numbers 305, 306, 310, 311, 312 and 313, FIG. 5B, reference numbers 321, 322, 324, 325, 326 and 330, FIG. 5C, reference numbers 351, 352, 355, 356, 357; 360, 361 and 362 and line 1, page 17, through line 33, page 46 of the specification,
- c) transform at least part of said integrated data into an impact summary for each of one or more elements of value and one or more external factors by using a series of models* - is described in FIG. 6A reference numbers 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413 and 414, FIG. 6B reference numbers 418, 421, 423, 425, 426 and 427 and line 1, page 47 through line 21, page 53 of the specification,
- d) quantify an impact by item of the elements of value and the external factors on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input* - as described in FIG. 6B, reference number 429, 430, 431, 432 and 433, FIG. 6C reference number 441, 442, 443, 445, 448, 449, 451, 452, 453, 454, 456, 457 and 458, FIG 6D, reference number 462, 463, 469, 470, 471 and 473 and line 22, page 53 through, line 14, page 78 of the specification,
- e) identify one or more scenarios and determine an expected range of values for each impact summary under each scenario* – as described in FIG. 6C, reference numbers 455 and line 15, page 78 through line 17, page 79 of the specification;
- f) simulate an organization financial performance using said matrix and the expected range of values for the impact summaries in order to quantify a total organization risk by item and provide data useful for identifying one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using a mixed integer non linear optimization analysis before outputting said element of value impacts, external factor impacts, total organization risk and identified changes by item* - as described in FIG 6C, reference numbers 456, 457 and 458, FIG 6D, reference number 462, 463, 469, 470, 471, 473, 476, 478 and 481 and line 18, page 79 through, line 17, page 92 of the specification,
- g) where the system links impact summaries together when they are not independent* – as

described in FIG. 6A reference numbers 412 and 414 and line 33 and 34 on page 58 of the specification, and

*h) where the system identifies and outputs one or more item level changes that will optimize a total organization risk and a total organization value for each of one or more scenarios - as described in FIG 6D, reference number 462, 463, 469, 470, 471, 473, 476, 478 and 481 and line 17, page 89 through, line 17, page 92 of the specification.*

Claim 2 - The limitations associated with dependent claim 2 are described in several places including FIG 5A reference number 310, line 1, page 21 through line 2, page 26 and line 14, page 39 through line 27, page 39 of the specification.

Claim 3 - The limitations and activities associated with dependent claim 3 are described in several places including, Table 5, page 8 and line 1, page 34 through line 25, page 34 of the specification.

Claim 4 - The limitations associated with dependent claim 4 are described in a variety of places including line 15, page 5 through line 20, page 6 of the specification.

Claim 5 - The limitations associated with dependent claim 5 are described in several places including FIG 5A reference number 310, line 15, page 5 through line 20, page 9, line 1, page 21 through line 2, page 26 and line 14, page 39 through line 27, page 39 of the specification.

Claim 6 - The limitations associated with dependent claim 6 are described in are described in several places including, Table 5, page 8 and line 1, page 34 through line 25, page 34 of the specification.

Claim 7 - The limitations associated with dependent claim 7 are described in a variety of places including item 9, page 21, item 2, page 47 and Table 26, page 54 of the specification.

Claim 8 - The limitations associated with dependent claim 8 are described in several places including FIG 5A reference number 310, line 1, page 21 through line 2, page 26 and line 14, page 39 through line 27, page 39 of the specification.

Claim 9 - The limitations associated with dependent claim 9 are described in a variety of places including line 15, page 5 through line 20, page 6 and Table 4, page 7 of the specification.

Claim 10 - The limitations associated with dependent claim 10 are described in a variety of places including Table 4, page 7 of the specification.

Independent Claim 11 - A second embodiment of the market value matrix is exemplified in independent claim 11 where an article of manufacture instructs a computer system (100) to

integrate and prepare data from organization databases, external databases and the Internet for use in processing and use the prepared data to develop a matrix of market value that identifies a contribution of one or more elements of value and one or more external factors to an organization value by a segment of value. The market value matrix is then used to complete simulations as required to measure risks to organization financial performance. A set of changes that will optimize organization risk, return and value are then optionally identified. Support for the specific steps contained in the claim can be found in the specification and drawings as detailed below:

The computer system (100) is described in FIG. 3, reference numbers 100, 110, 111, 112, 113, 114, 115, 116, 117, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 130, 131, 132, 133, 134, 135, 136, 137 and 138 and line 26, page 18 through line 24, page 20 of the specification.

- a) establishing a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization and a plurality of processing stages and then integrating data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions – the preparation of data is described in FIG. 4, reference number 201, FIG. 5A, reference numbers 305, 306, 310, 311, 312 and 313, FIG. 5B, reference numbers 321, 322, 324, 325, 326 and 330, FIG. 5C, reference numbers 351, 352, 355, 356, 357; 360, 361 and 362 and line 1, page 17, through line 33, page 46 of the specification,*
- b) transforming at least part of said integrated data into an impact summary for each of one or more elements of value and one or more external factors by using a series of models – is described in FIG. 6A reference numbers 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413 and 414, FIG. 6B reference numbers 418, 421, 423, 425, 426 and 427 and line 1, page 47 through line 21, page 53 of the specification,*
- c) quantifying an impact by item of the elements of value and the external factors on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input – as described in FIG. 6B, reference number 429, 430, 431, 432 and 433, FIG. 6C reference number 441, 442, 443, 445, 448, 449, 451, 452, 453, 454, 456, 457 and 458, FIG 6D, reference number 462, 463, 469, 470, 471 and 473 and line 22, page 53 through, line 14, page 78 of the specification,*
- d) identifying one or more scenarios and determine an expected range of values for each impact summary under each scenario, – as described in FIG. 6C, reference numbers 455 and line 15, page 78 through line 17, page 79 of the specification;*
- f) simulating an organization financial performance using said matrix and the expected range of*

*values for the impact summaries in order to quantify a total organization risk by item and provide data useful for optionally identifying one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using mixed integer non linear optimization analysis before outputting said element of value impacts, external factor impacts, total organization risk and identified changes, if any, by item - as described in FIG 6C, reference numbers 456, 457 and 458, FIG 6D, reference number 462, 463, 469, 470, 471, 473, 476, 478 and 481 and line 18, page 79 through, line 17, page 92 of the specification,*

*g) where the system links impact summaries together when they are not independent – as described in FIG. 6A reference numbers 412 and 414 and line 33 and 34 on page 58 of the specification, and*

*h) where the method optionally identifies and outputs one or more item level changes that will optimize a total organization risk and a total organization value for each of one or more scenarios - as described in FIG 6D, reference number 462, 463, 469, 470, 471, 473, 476, 478 and 481 and line 17, page 89 through, line 17, page 92 of the specification.*

Claim 12 - The limitations associated with dependent claim 12 are described in several places including FIG 5A reference number 310, line 1, page 21 through line 2, page 26 and line 14, page 39 through line 27, page 39 of the specification.

Claim 13 - The limitations and activities associated with dependent claim 3 are described in several places including, Table 5, page 8 and line 1, page 34 through line 25, page 34 of the specification.

Claim 14 - The limitations associated with dependent claim 14 are described in several places including FIG 5A reference number 310, line 15, page 5 through line 20, page 9, line 1, page 21 through line 2, page 26 and line 14, page 39 through line 27, page 39 of the specification.

Claim 15 - The limitations associated with dependent claim 15 are described in a variety of places including line 15, page 5 through line 20, page 6 of the specification.

Claim 16 - The limitations associated with dependent claim 16 are described in are described in several places including, Table 5, page 8 and line 1, page 34 through line 25, page 34 of the specification.

Claim 17 - The limitations associated with dependent claim 17 are described in a variety of places including line 15, page 5 through line 20, page 6 and Table 4, page 7 of the specification.

Claim 18 - The limitations associated with dependent claim 18 are described in a variety of places including line 1, page 21 through line 2, page 26 of the specification.

Claim 19 - The limitations associated with dependent claim 19 are described in a variety of places including line 1, page 21 through line 2, page 26 of the specification.

Independent Claim 23 - A third embodiment of the market value matrix is exemplified in independent claim 23 where an process uses a computer system (100) to integrate and prepare data from organization databases, external databases and the Internet for use in processing and use the prepared data to develop a matrix of market value that identifies a contribution of one or more elements of value and one or more external factors to an organization value by a segment of value. The market value matrix is then used to complete simulations as required to measure risks to organization financial performance. A set of changes that will optimize organization risk, return and value are then optionally identified. Support for the specific steps contained in the claim can be found in the specification and drawings as detailed below:

The computer system (100) is described in FIG. 3, reference numbers 100, 110, 111, 112, 113, 114, 115, 116, 117, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 130, 131, 132, 133, 134, 135, 136, 137 and 138 and line 26, page 18 through line 24, page 20 of the specification.

*a) establishing a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization and a plurality of processing stages and then integrating data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions* – the preparation of data is described in FIG. 4, reference number 201, FIG. 5A, reference numbers 305, 306, 310, 311, 312 and 313, FIG. 5B, reference numbers 321, 322, 324, 325, 326 and 330, FIG. 5C, reference numbers 351, 352, 355, 356, 357; 360, 361 and 362 and line 1, page 17, through line 33, page 46 of the specification,

*b) transforming at least part of said integrated data into an impact summary for each of one or more elements of value and one or more external factors by using a series of models* - is described in FIG. 6A reference numbers 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413 and 414, FIG. 6B reference numbers 418, 421, 423, 425, 426 and 427 and line 1, page 47 through line 21, page 53 of the specification,

*c) quantifying an impact by item of the elements of value and the external factors on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input* - as described in FIG. 6B, reference number 429, 430, 431, 432 and 433, FIG. 6C reference number 441, 442, 443, 445, 448, 449, 451, 452, 453, 454, 456, 457 and 458, FIG 6D, reference number 462, 463, 469, 470, 471 and 473 and line 22, page 53 through, line 14, page 78 of the specification,

- d) identifying one or more scenarios and determine an expected range of values for each impact summary under each scenario, – as described in FIG. 6C, reference numbers 455 and line 15, page 78 through line 17, page 79 of the specification;
- f) simulating an organization financial performance using said matrix and the expected range of values for the impact summaries in order to quantify a total organization risk by item and provide data useful for optionally identifying one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using mixed integer non linear optimization analysis before outputting said element of value impacts, external factor impacts, total organization risk and identified changes, if any, by item - as described in FIG 6C, reference numbers 456, 457 and 458, FIG 6D, reference number 462, 463, 469, 470, 471, 473, 476, 478 and 481 and line 18, page 79 through, line 17, page 92 of the specification,
- g) where the system links impact summaries together when they are not independent – as described in FIG. 6A reference numbers 412 and 414 and line 33 and 34 on page 58 of the specification, and
- h) where the method optionally identifies and outputs one or more item level changes that will optimize a total organization risk and a total organization value for each of one or more scenarios - as described in FIG 6D, reference number 462, 463, 469, 470, 471, 473, 476, 478 and 481 and line 17, page 89 through, line 17, page 92 of the specification.

Claim 24 - The limitations associated with dependent claim 24 are described in a variety of places including Table 5, page 8 and line 1, page 34 through line 25, page 34 of the specification.

Claim 25 - The limitations associated with dependent claim 25 are described in a variety of places including Table 4, page 7, Table 5, page 8, Table 6, page 9 and line 1, page 34 through line 25, page 34 of the specification.

Claim 26 - The limitations associated with dependent claim 26 are described in a variety of places including FIG. 1 and line 25, page 26 of the specification.

Claim 27 - The limitations associated with dependent claim 27 are described in a variety of places including FIG. 1 and line 25, page 26 of the specification.

Claim 28 - The limitations associated with dependent claim 28 are described in a variety of places including line 15, page 5 through line 20, page 6 and Table 4, page 7 of the specification.

## **6. Grounds of rejection to be reviewed on appeal**

**Issue 1** – Whether claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10 are obvious under 35 USC 103(a) given Published Patent Application 2003/0208427 (hereinafter, Peters) in view of Published Patent Application 2001/0039525 (hereinafter, Messmer)? Messmer matured into U.S. Patent 7,028,005.

**Issue 2** – Whether claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19 are obvious under 35 USC 103(a) given Peters in view of Messmer?

**Issue 3** – Whether claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 are obvious under 35 USC 103(a) given Peters in view of Messmer?

**Issue 4** – Whether claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 represent statutory subject matter under 35 USC 101?

## **7. The Argument**

For each ground of rejection which Appellant contests herein which applies to more than one claim, such additional claims, to the extent separately identified and argued below, do not stand and fall together.

**Issue 1** – Whether claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10 are obvious under 35 USC 103(a) given Published Patent Application 2003/0208427 (hereinafter Peters) in view of Published Patent Application 2001/0039525 (hereinafter Messmer)?

The claims are patentable because the claim rejections are based on a number of errors in the facts and in the law. Because of these errors, the cited combination of teachings (Peters and Messmer) and the arguments related to the cited combination of teachings fail to establish a *prima facie* case of obviousness for every rejected claim as detailed below.

**Errors 1 through 190** – It is well established that: *"in determining the difference between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious but whether the claimed invention as a whole would have been obvious (Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983))."* Furthermore, it is well established that: *A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).* Errors in the claim rejections caused by the apparent failure

to acknowledge the fact that the cited references teach away from the invention described in claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10 include:

Errors #1 through #10) A failure to acknowledge the fact that the Peters reference teaches away from the claimed quantification of an impact of the elements of value and the external factors on a return from each segment of value by analyzing data with a series of models. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches away from using a series of models to quantify returns as a function of elements of value and external factors by teaching that expected returns are obtained from historical data that lists actual returns and that each item (aka asset) generates a return independently (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #11 through #20) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed quantification of an impact of the elements of value and the external factors on a return from each segment of value by analyzing data with a series of models. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches that instead of using a series of models to quantify returns as a function of elements of value and external factors, expected returns are identified based on forecast recovery rates that are identified using some unknown process (see Messmer, paragraphs 66, 85 and 92) and that each item (aka asset) generates a return independently. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #21 trough #30) A failure to acknowledge the fact that the Peters reference teaches away from the claimed definition of risk. Peters teaches away from every aspect of the claimed invention. The claimed invention teaches is that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). By way of contrast Peters teaches that risk is the standard deviation in returns based on historical averages (see Peters, FIG. 14). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-

obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #31 through #40) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed definition of risk. Messmer teaches away from every aspect of the claimed invention. The claimed invention teaches is that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). By way of contrast Messmer teaches that risk is the standard deviation in the internal rate of return and/or variance in payback period (see Messmer, paragraph 90). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #41 through #50) A failure to acknowledge the fact that the Peters reference teaches away from the claimed simulation of organization financial performance with a matrix of market value to quantify total organization risk by item. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches that instead of using simulation, risk ratings are based on historical data series for asset classes and their respective correlations (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #51 through #60) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed simulation of organization financial performance with a matrix of market value to quantify total organization risk by item. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches that asset values are established by using forecast recovery rates in one of four underwriting processes (see Messmer, Fig. 10):

- a) full underwriting – where an underwriter establishes the value of each asset using pre-established rules (see Messmer, paragraphs 23 and 27),
- b) 100% sample underwriting – where an underwriter establishes the value of a group of 100% of the assets and the value of each asset is established using a rule (see Messmer, paragraph 30),
- c) partial sample underwriting - involves forming a cluster sample group and one hundred percent sampling of a representative group from within a cluster of the groups

being sampled and random sampling of the other groups in the cluster. The underwriter establishes the value of the representative group and the remaining groups are valued on the basis of extrapolations from the representative group valuation. Individual assets are valued on the basis of their tranche group (see Messmer, paragraph 30), and

d) inferred valuation – involves valuing groups of assets based on their similarity to assets underwritten using process a), b) or c) outlined above (see Messmer, paragraphs 32 through 49).

As part of these processes risk scores: are assigned based on subjective underwriter assessments, inferred from the similarity of un-scored assets to assets with assigned risk scores, or an inferred from the data (see Messmer, FIG. 7, paragraph 32 and paragraph 62). Simulation is used for developing bidding strategies and selecting sample sizes for underwriting but it is not used for quantifying risk. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #61 through #70) A failure to acknowledge the fact that the Peters reference teaches away from the claimed item level analysis. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches that instead of analyzing the value and risk of individual items, risk and expected returns are identified on the basis data for asset classes and their respective correlations (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #71 through #80) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed item level analysis. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches that all automated analyses are completed at the tranche level (see Messmer, paragraphs 3 through 6). By teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #81 through #90) A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization method. Peters teaches away from every

aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed non-linear, mixed integer optimization of return (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #91 through #100) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed optimization method. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the use of stochastic optimization in place of the claimed scenario based optimization (see Messmer, paragraph 58). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #101 through #110) A failure to acknowledge the fact that Peters teaches away from the claimed optimization for specific scenarios. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization based on historical returns instead of identifying an optimal set of changes based on a future scenario (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #111 through #120) A failure to acknowledge the fact that Peters teaches away from the claimed evaluation of external factor impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total, historical return by asset class instead of identifying the external factors that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #121 through #130) A failure to acknowledge the fact that Peters teaches away from the claimed evaluation of element of value impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total,

historical return by asset class instead of identifying the elements of value and items that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #131 through #140) A failure to acknowledge the fact that the Peters reference teaches away from the claimed use of summaries of data to evaluate element of value and external factor impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total, historical return by asset class instead of identifying the elements of value and external factors that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #141 through #150) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed use of summaries of data as inputs to statistical models. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the analysis of every attribute for each asset and the use of "dummy variables" (see Messmer, paragraph 58) in developing models of actual asset value. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #151 through #160) A failure to acknowledge the fact that the Peters reference teaches away from the claimed integration of data from a plurality of systems. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of a single database and user input of portfolio holdings (see Peters, paragraph 22). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #161 through #170) A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization of risk. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed

non-linear, mixed integer optimization of risk (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #171 through #180) A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization of value. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed non-linear, mixed integer optimization of value (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10.

Errors #181 and #182) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the analysis and optimization of an investment portfolio instead of teaching the analysis and optimization of any type of organization (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 2 and claim 8.

Error #183 and #184) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed analysis of a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the analysis and optimization of bids for tranches of financial assets instead of teaching the analysis and optimization of any type of organization (see Messmer, abstract). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 2 and claim 8.

Error #185) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, information technology return, intellectual property return, investor return, market sentiment return, market return,

partnership return, process return, production equipment return, real option return, vendor return. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8), that exclusively focus on investor return, that have been modified to incorporate risk and geographic preferences (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 3.

Error #186) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed analysis of alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, information technology return, intellectual property return, investor return, market sentiment return, market return, partnership return, process return, production equipment return, real option return, vendor return and combinations thereof. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the development of a competitive bidding strategy that is expected to optimize a single type of return - investor return (see Messmer, paragraph 56). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 3.

Error #187) A failure to acknowledge the fact that the Peters reference teaches away from the claimed support of financial performance management by segment of value, element of value, enterprise and combinations thereof. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the optimization of a portfolio comprised of a single segment of value, financial assets (see Peters, abstract). Peters does not support enterprise analysis as discussed under error #181 and error #182. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 5.

Error #188) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed support of financial performance management by segment of value, element of value, enterprise and combinations thereof. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the optimization of bids for a single segment of value, financial assets (see Messmer, paragraph 56). Messmer mentions segments, however, these segments correspond to sub-elements of value in accordance with the lexicon of the instant specification as do the tranches

Messmer focuses on. Messmer does not support enterprise analysis as discussed under error #183 and error #184. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 5.

Error #189) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of elements of value selected from the group consisting of: alliances, brands, channels, customers, employees, information technology, intellectual property, partnerships, processes, vendors and combinations thereof. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches an exclusive focus on financial assets (see Peters, abstract). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 6.

Error #190) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed analysis of elements of value selected from the group consisting of: alliances, brands, channels, customers, employees, information technology, intellectual property, partnerships, processes, vendors and combinations thereof. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches an exclusive focus on financial assets (see Messmer, abstract). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 6.

Errors 191 through 340 - It is well established that *“when determining whether a claim is obvious, an examiner must make ‘a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.’* *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). Thus, ‘obviousness requires a suggestion of all limitations in a claim.’ CFMT, Inc. v. Yieldup Intern. Corp., 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). Furthermore, the Board of Patent Appeal and Interferences recently confirmed (*In re Wada and Murphy*, Appeal No. 2007- 3733) that a proper, post KSR obviousness determination still requires that an examiner must make *“a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.”* *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). In other words, obviousness still requires a suggestion of all the limitations in a claim. Errors in the claim rejections caused by the apparent failure to acknowledge the fact that the cited documents do not teach one or more limitations of the claimed invention include:

Errors #191 through #330) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 1 (affects claims 2, 3, 4, 5, 6, 7, 8, 9 and 10), including:

- a) establish a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization where each matrix cell is defined by a segment of value and an element of value or an external factor (#191 through #200),
- b) integrate data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions (#201 through #210),
- c) transform at least part of said integrated data into an impact summary for each of one or more elements of value by using a series of models (#211 through #220),
- d) transform at least part of said integrated data into an impact summary for each of one or more external factors by using a series of models (#221 through #230),
- e) quantify an impact by item of the elements of value on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input (#231 through #240),
- f) quantify an impact by item of the external factors on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input (#241 through #250),
- g) identify one or more scenarios (#251 through #260),
- h) identify one or more scenarios and determine an expected range of values for each impact summary under each scenario (#261 through #270),
- i) simulate an organization financial performance using said matrix and the expected range of values for the impact summaries in order to quantify a total organization risk by item (#271 through #280),
- j) identify one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using a mixed integer non linear optimization analysis (#281 through #290)
- k) outputting element of value impacts, external factor impacts, total organization risk and identified changes by item (#291 through #300),
- l) where the system links impact summaries together when they are not independent (#301 through #310),
- m) identify and output one or more item level changes that will optimize a total organization risk for each of one or more scenarios (#311 through #320), and
- n) identify and output one or more item level changes that will optimize a total organization

value for each of one or more scenarios (#321 through #330).

Error #331) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 2 and claim 8, including: *where an organization is a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration.*

Error #332) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 3, including: *where one or more aspects of an organization return are selected from the group consisting of alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, information technology return, intellectual property return, market sentiment return, partnership return, process return, production equipment return, real option return, vendor return and combinations thereof.*

Error #333) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 5, including: *support for financial performance management by segment of value, element of value, enterprise and combinations thereof.*

Errors #334) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 6, including: *where one or more elements of value are selected from the group consisting of: alliances, brands, channels, customers, employees, information technology, intellectual property, partnerships, processes, vendors and combinations thereof.*

Error #335) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 9, including: *wherein a segment of value is a current operation.*

Error #336) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 9, including: *wherein a segment of value is derivatives.*

Error #337) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 9, including: *wherein a segment of value is real options.*

Error #338) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 9, including: *wherein a segment of value is*

*market sentiment.*

Error #339) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 9, including: *wherein a segment of value is selected from the group consisting of current operation, derivatives, investments, real options, market sentiment and combinations thereof.*

Error #340) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 10, including: *wherein the current operation segment of value can be further subdivided by component of value where the components of value are revenue, expense or capital change.*

Errors 341 through 350 It is well established that "*in order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.*" *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992). Errors 341 through 350 arise from the fact that the cited references are not reasonably pertinent to the claimed invention as they relate to the optimization of a portfolio of securities (Peters) and the optimization of bids for portfolios of financial assets (Messmer). As is well known to those of average skill in the art, the optimization of financial performance of an organization requires consideration of a number of factors that do not need to be considered when managing or bidding for a portfolio of financial assets including:

- a) the fact that the elements of value and items of the organization can not be bought and/or sold as they can in a portfolio of securities and/or financial assets,
- b) the fact that the return from the elements of value and items of the organization are generally unknown,
- c) the fact that the elements of value and items of the organization may interact and that this interaction may affect their value and the value of the organization,
- d) the fact that the organization may have real options for growth that need to be evaluated and managed,
- e) the fact that the organization generally has to take specific actions to manage the risks that the Peter's invention implicitly assumes are managed by an investor,
- f) the fact that the organization may have a current operation that needs to be evaluated and managed,

- g) the fact that many of the risks associated with the elements of value and items of the organization are unknown,
- h) the fact that the organization may have to take specific actions to manage risks that the Messmer invention does not face as the evaluated investments represent financial interests in real property instead of real property,
- i) the fact that the organization may have derivatives that need to be evaluated and managed,
- j) the fact that the value of the elements of value and items of the organization are generally unknown,
- k) data describing the performance of different elements of value and items is often contained in a plurality of internal systems, and
- l) data describing external factors is not generally available from internal systems and must be obtained from other sources.

Furthermore, the primary reference relies on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8) which includes the now discredited capital asset pricing model and efficient market hypothesis. Because these teachings cannot explain security market behavior over the last 5, 10, 15, 20, 25 or 40 years (see Evidence Appendix, pages 77 through 79) they are not pertinent to the evaluation and management of financial assets that are traded in one or more markets, let alone the evaluation and management of the items and element of value (of an organization) for which no market exists. Because the cited references are not pertinent to the claimed invention, the *prima facie* case of obviousness cannot be established. Affects all claims.

**Errors 351 through 390** – It is well established that when *"the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)"*. Errors in the claim rejections caused by the apparent failure to acknowledge the fact that changes in the principles of operation of Peters will be required to replicate the invention described in claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10 include:

**Errors #351 through #360** One principle of operation that Peters relies on is the well known use of historical returns by asset class to identify an optimal portfolio (see Peters, paragraph 25). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that returns are a function of element of value performance and external factors and that the

expected returns need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. Changing to the claimed method for determining returns would be a change in a principle of operation of the Peters invention. Affects all claims.

Errors #361 through #370 A second principle of operation that Peters relies on is that each asset generates its own return (see Peters, paragraph 25). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention teaches and relies on the fact that items (and elements of value) generate segment of value returns. Changing to the claimed model of return generation would be a change in a principle of operation of the Peters invention. Affects all claims.

Error #371 through #380 A third principle of operation that Peters relies on is that risk is the standard deviation in returns based on historical averages (see Peters, FIG. 14). This principle of operation would have to be changed to replicate the functionality of the claimed invention which relies on the fact that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). Changing to rely on the claimed definition of risk would be a change in a principle of operation of the Peters invention. Affects all claims.

Error #381 through #390 A fourth principle of operation that Peters relies on is mean variance optimization of portfolio value adjusted for risk and geographic preferences (see Peters, abstract and paragraph 29). This principle of operation would have to be changed to replicate the functionality of the claimed invention which identifies changes that will optimize organization return for a specific scenario. Changing to rely on the claimed type of optimization would be a change in a principle of operation of the Peters invention. Affects all claims.

Because the required modification of Peters would change several of its principles of operation, the *prima facie* case of obviousness cannot be properly made.

Errors 391 through 440 – Errors in the claim rejections caused by the apparent failure to acknowledge the fact that changes in the principles of operation of Messmer will be required to replicate the invention described in claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10 include:

Errors #391 through #400 One principle of operation that Messmer relies on is the well known use of rules (see both Brown references) to identify the value of a group of assets

or an asset (see Messmer, paragraphs 23 and 27). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that returns and value are a function of element of value performance and external factors and that returns and value need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. These models are needed to support the risk analysis and return optimization. Changing to the claimed method for determining returns would be a change in a principle of operation of the Messmer invention. Affects all claims.

Errors #401 through #410 A second principle of operation that Messmer relies on is the well known use of the similarity to characteristics of an asset with a known value (see Jost) to identify the value of a group of assets or an asset (see Messmer, paragraph 30). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that returns and value are a function of element of value performance and external factors and that returns and value need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. These models are needed to support the risk analysis and return optimization. Changing to the claimed method for determining returns would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #411 through #420 A third principle of operation that Messmer relies on is the well known assumption that risk is the standard deviation in the internal rate of return (see Messmer, paragraph 90). This principle of operation would have to be changed to replicate the functionality of the claimed invention which relies on the fact that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). Changing to rely on the claimed definition of risk would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #421 through #430 A fourth principle of operation that Messmer relies on stochastic optimization (see Messmer, paragraph 58). This principle of operation would have to be changed to replicate the functionality of the claimed invention which identifies changes that will optimize organization return for a specific scenario. Changing to rely on the claimed type of optimization would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #431 through #440 A fifth principle of operation that Messmer relies on is the separate evaluation of all variables associated with an asset (see Messmer, paragraph 58) and their use in developing models of actual asset value. This principle of operation would have to be changed to replicate the functionality of the claimed invention which creates and uses summaries of each element of value, external factor and item for use in creating statistical models of contribution to the segments of value. Changing Messmer to rely on an analysis of data summaries in statistical models of segments of value would be a change in a principle of operation of the Messmer invention. Affects all claims.

Because the required modification of Messmer would change several of its principles of operation, the *prima facie* case of obviousness cannot be properly made.

Errors 441 through 450 – It is well established that *when a modification of a reference destroys the intent, purpose or function of an invention such a proposed modification is not proper and the prima facie cause of obviousness cannot be properly made (In re Gordon 733 F.2d 900, 221 U.S.PQ 1125 Fed Circuit 1984)*. The function, intent and purpose of the invention described by Peters is to identify the asset class changes required to support the mean variance optimization of portfolio value adjusted for risk and geographic preferences (see Peters, abstract and paragraph 29). By way of contrast, the claimed invention identifies item level changes that will optimize organization return for a specific scenario. Modifying the Peters invention to use the claimed optimization method would destroy its ability to perform its intended function. Because the required modification of Peters would destroy its ability to perform its intended function, the *prima facie* case of obviousness cannot be properly made. Affects all claims

Errors 451 through 460 – *The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting In re Kahn 41 stated that “[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness (KSR, 550 U.S. at I, 82 USPQ2d at 1396).”* In spite of this well known requirement, the Examiner has not provided the required explanation. In particular, the Examiner has not explained what would motivate someone of average skill in the art to destroy the functionality of the Peters invention and modify the principles of operation of both Messmer and Peters as discussed under errors 351 through 450. This explanation is particularly important when one considers that Messmer and Peters teach away from all claimed methods and/or fail to teach or suggest almost every claim limitation as discussed under errors 1 through 350. In place of an explanation with articulated reasoning and a rational underpinning the

Examiner has reached a conclusion of obviousness on the basis of several hundred errors in the facts and the law. Because no rational underpinning has been provided to support the legal conclusion of obviousness, the prima facie case of obviousness cannot be properly established. Affects all claims.

**Errors 461 through 500** – The claim rejections are based on 35 U.S.C. §103(a) which states: *A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title [35 USC 102], if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.* Errors in the claim rejections caused by the apparent failure to meet any of the statutory requirements for claim rejection include:

Errors #461 through #470 Failure to acknowledge the fact that the cited documents fail to teach or suggest the subject matter as whole. As illustrated by the preceding discussion, the obviousness rejections appear to be based of a non-existent standard for obviousness "mentions the same word as another document" instead of "teaches or suggests the subject matter as a whole" as there is no aspect of the rejected claims that is taught or suggested by the cited documents. It is also well established that the "Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art." *In re Lowry*, 32 F.3d 1579, 1582 (Fed. Cir. 1994). As detailed under errors 1 through 460, it does not appear that any of the claim limitations were actually considered.

Errors #471 through #480 Failure to acknowledge the fact that the claim rejections have been authored by an individual(s) who appears to lack the level of skill in the art required to author such rejections. It is well established that the "*hypothetical 'person having ordinary skill in the art' to which the claimed subject matter pertains would, of necessity have the capability of understanding the scientific and engineering principles applicable to the pertinent art*" *Ex parte Hiyamizu*, 10 USPQ2d 1393, 1394 (Bd. Pat. App. & Int'l. 1988). It is unlikely that anyone who understood the scientific and engineering principles applicable to the pertinent art would ever suggest Peters or Messmer as a reference in support of an obviousness rejection for the claimed inventions for the reasons described previously under errors 1 through 470.

Errors #481 through #490 Failure to acknowledge the fact that the claim rejections are

based on apparent misrepresentations regarding the teachings of the cited documents. This apparent misrepresentation may be a product of the fact that the Examiner does not appear to have the requisite level of skill in the relevant arts (see Errors #471 through #480).

Errors #491 through #500) Failure to acknowledge the special meaning given to the word "risk" and the terms "matrix of value" and "segment of value". It is well established that *"words of the claim are generally given their ordinary and customary meaning, unless it appears from the written description that they were used differently by the applicant.* See *Teleflex Inc. v. Ficosa North America Corp.*, 299 F.3d 1313, 1325, 63 USPQ2d 1374, 1381 (Fed. Cir. 2002), *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342, 60 USPQ2d 1851, 1854 (Fed. Cir. 2001), and MPEP § 2111.01. The word "risk" was given a particular meaning in the specification (i.e. Table 53, on page 86 of the specification). Segments of value were defined in several places including the second paragraph on page 5 of the specification. The matrix of value is also defined in several places including the first paragraph of page 7 and Table 5 on page 8 of the specification.

Errors 501 through 520 – In *Dickinson v. Zurko*, 119 S. Ct. 1816, 50 USPQ2d 1930 (1999), the Supreme Court held that the appropriate standard of review of U.S.P.T.O. findings are the standards set forth in the Administrative Procedure Act ("APA") at 5 U.S.C. 706 (1994). The APA provides two standards for review – an arbitrary and capricious standard and a substantial evidence standard. Errors in the claim rejections caused by the apparent failure to meet any of the requirements of the APA include:

Errors #501 through #510) Failure to acknowledge the fact that the claim rejections fail under the substantial evidence standard. Errors 1 through 500 clearly show that the relevant Office Action fails to provide even a scintilla of evidence to support the obviousness rejections of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10 and that as a result the rejections fail to meet the substantial evidence standard.

Errors #511 through #520) Failure to acknowledge the fact that the claim rejections fail under the arbitrary and capricious standard. The Appellant respectfully submits that the obviousness rejection of claim 1, claim 2, claim 3, claim 4, claim 5, claim 6, claim 7, claim 8, claim 9 and claim 10 also fails to pass the arbitrary and capricious test for a number of reasons including the fact that:

- a) as detailed above, the references cited by the Examiner provide substantial

evidence of novelty, non-obviousness and newness of the rejected claims (see errors 1 through 450);

b) no rational underpinning has been provided to support the legal conclusion of obviousness (see error 451 through 460),

c) there is no rational connection between the statutory requirements for an obviousness rejection, the agency fact findings and the rejection of the claims (see errors 461 through 500), and

d) prior agency fact-findings have shown that 35 U.S.C. 103 requirements for non-obviousness are apparently not always considered during the prosecution and allowance of large company patent applications (i.e. U.S. Patent 7,028,005). This apparently unequal application of the law comprises an apparent violation of 35 USC 3.

Because the claim rejections do not meet either standard of the APA, the *prima facie* case of obviousness cannot be properly established.

Summarizing the above, the Appellant respectfully submits that the Examiner has failed to produce the evidence required to satisfy the requirements of the APA and/or establish a *prima facie* case of obviousness for a single claim. These failures provide additional evidence that the claimed invention is new, novel and non-obvious.

**Issue 2 – Whether claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19 are obvious under 35 USC 103(a) given Peters in view of Messmer?**

The claims are patentable because the claim rejections are based on a number of errors in the facts and in the law. Because of these errors, the cited combination of teachings (Peters and Messmer) and the arguments related to the cited combination of teachings fail to establish a *prima facie* case of obviousness for every rejected claim as detailed below.

**Errors 1 through 175** – It is well established that: *“in determining the difference between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious but whether the claimed invention as a whole would have been obvious (Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983)).”* Furthermore, it is well established that: *A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).* Errors in the claim rejections caused by the apparent failure to acknowledge the fact that the cited references teach away from the invention described in claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19

include:

Errors #1 through #9) A failure to acknowledge the fact that the Peters reference teaches away from the claimed quantification of an impact of the elements of value and the external factors on a return from each segment of value by analyzing data with a series of models. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches away from using a series of models to quantify returns as a function of elements of value and external factors by teaching that expected returns are obtained from historical data that lists actual returns (see Peters, paragraph 25) and that each item (aka asset) generates a return independently. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #10 through #18) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed quantification of an impact of the elements of value and the external factors on a return from each segment of value by analyzing data with a series of models. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches that instead of using a series of models to quantify returns as a function of elements of value and external factors, expected returns are identified based on forecast recovery rates that are identified using some unknown process (see Messmer, paragraphs 66, 85 and 92) and that each item (aka asset) generates a return independently. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #19 trough #27) A failure to acknowledge the fact that the Peters reference teaches away from the claimed definition of risk. Peters teaches away from every aspect of the claimed invention. The claimed invention teaches is that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). By way of contrast Peters teaches that risk is the standard deviation in returns based on historical averages (see Peters, FIG. 14). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #28 through #36) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed definition of risk. Messmer teaches away from every aspect of the claimed invention. The claimed invention teaches is that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). By way of contrast Messmer teaches that risk is the standard deviation in the internal rate of return and/or variance in payback period (see Messmer, paragraph 90). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #37 through #45) A failure to acknowledge the fact that the Peters reference teaches away from the claimed simulation of organization financial performance with a matrix of market value to quantify total organization risk by item. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches that instead of using simulation, risk ratings are based on historical data series for asset classes and their respective correlations (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #46 through #54) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed simulation of organization financial performance with a matrix of market value to quantify total organization risk by item. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches that asset values are established by using forecast recovery rates in one of four underwriting processes (see Messmer, Fig. 10):

- a) full underwriting – where an underwriter establishes the value of each asset using pre-established rules (see Messmer, paragraphs 23 and 27),
- b) 100% sample underwriting – where an underwriter establishes the value of a group of 100% of the assets and the value of each asset is established using a rule (see Messmer, paragraph 30),
- c) partial sample underwriting - involves forming a cluster sample group and one hundred percent sampling of a representative group from within a cluster of the groups being sampled and random sampling of the other groups in the cluster. The underwriter establishes the value of the representative group and the remaining groups

are valued on the basis of extrapolations from the representative group valuation. Individual assets are valued on the basis of their tranche group (see Messmer, paragraph 30), and

d) inferred valuation – involves valuing groups of assets based on their similarity to assets underwritten using process a), b) or c) outlined above (see Messmer, paragraphs 32 through 49).

As part of these processes risk scores: are assigned based on subjective underwriter assessments, inferred from the similarity of un-scored assets to assets with assigned risk scores, or an inferred from the data (see Messmer, FIG. 7, paragraph 32 and paragraph 62). Simulation is used for developing bidding strategies and selecting sample sizes for underwriting but it is not used for quantifying risk. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #55 through #63) A failure to acknowledge the fact that the Peters reference teaches away from the claimed item level analysis. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches that instead of analyzing the value and risk of individual items, risk and expected returns are identified on the basis data for asset classes and their respective correlations (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #64 through #72) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed item level analysis. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches that all automated analyses are completed at the tranche level (see Messmer, paragraphs 3 through 6). By teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #73 through #81) A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization method. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed

non-linear, mixed integer optimization of return (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #82 through #90) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed optimization method. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the use of stochastic optimization in place of the claimed scenario based optimization (see Messmer, paragraph 58). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #91 through #99) A failure to acknowledge the fact that Peters teaches away from the claimed optimization for specific scenarios. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization based on historical returns instead of identifying an optimal set of changes based on a future scenario (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #100 through #108) A failure to acknowledge the fact that Peters teaches away from the claimed evaluation of external factor impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total, historical return by asset class instead of identifying the external factors that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #109 through #117) A failure to acknowledge the fact that Peters teaches away from the claimed evaluation of element of value impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total, historical return by asset class instead of identifying the elements of value and items that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach

away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #118 through #126 A failure to acknowledge the fact that the Peters reference teaches away from the claimed use of summaries of data to evaluate element of value and external factor impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total, historical return by asset class instead of identifying the elements of value and external factors that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #127 through #135 A failure to acknowledge the fact that the Messmer reference teaches away from the claimed use of summaries of data as inputs to statistical models. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the analysis of every attribute for each asset and the use of "dummy variables" (see Messmer, paragraph 58) in developing models of actual asset value. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #136 through #144 A failure to acknowledge the fact that the Peters reference teaches away from the claimed integration of data from a plurality of systems. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of a single database and user input of portfolio holdings (see Peters, paragraph 22). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #145 through #153 A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization of risk. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed non-linear, mixed integer optimization of risk (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional

evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #154 through #162) A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization of value. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed non-linear, mixed integer optimization of value (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19.

Errors #163) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the analysis and optimization of an investment portfolio instead of teaching the analysis and optimization of any type of organization (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 12.

Error #164) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed analysis of a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the analysis and optimization of bids for tranches of financial assets instead of teaching the analysis and optimization of any type of organization (see Messmer, abstract). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 12.

Error #165) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, information technology return, intellectual property return, investor return, market sentiment return, market return, partnership return, process return, production equipment return, real option return, vendor return. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters,

paragraph 8), that exclusively focus on investor return, that have been modified to incorporate risk and geographic preferences (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 13.

Error #166) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed analysis of alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, information technology return, intellectual property return, investor return, market sentiment return, market return, partnership return, process return, production equipment return, real option return, vendor return and combinations thereof. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the development of a competitive bidding strategy that is expected to optimize a single type of return - investor return (see Messmer, paragraph 56). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 13.

Error #167) A failure to acknowledge the fact that the Peters reference teaches away from the claimed support of financial performance management by segment of value, element of value, enterprise and combinations thereof. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the optimization of a portfolio comprised of a single segment of value, financial assets (see Peters, abstract). Peters does not support enterprise analysis as discussed under error #163. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 14.

Error #168) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed support of financial performance management by segment of value, element of value, enterprise and combinations thereof. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the optimization of bids for a single segment of value, financial assets (see Messmer, paragraph 56). Messmer mentions segments, however, these segments correspond to sub-elements of value in accordance with the lexicon of the instant specification as do the tranches Messmer focuses on. Messmer does not support enterprise analysis as discussed under error #164. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of

claim 14.

Error #169) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of elements of value selected from the group consisting of: alliances, brands, channels, customers, vendors and combinations thereof. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches an exclusive focus on financial assets (see Peters, abstract). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 16.

Error #170) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed analysis of elements of value selected from the group consisting of: alliances, brands, channels, customers, vendors and combinations thereof. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches an exclusive focus on financial assets (see Messmer, abstract). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 16.

Error #171) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of a real option segment of value. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8), that exclusively focus on investor return. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 17.

Error #172) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of a market sentiment segment of value. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8) that rely on the now discredited efficient market hypothesis. The efficient market hypothesis teaches that there is no market sentiment. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 17.

Error #173) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of variability risks. Peters teaches away from every aspect of the

claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8), that assert that non market risks can theoretically be diversified away and that as a result they should be ignored. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 18.

Error #174) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of contingent liabilities. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8), that assert that non market risks can theoretically be diversified away and that as a result they should be ignored. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 18.

Error #175) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of event risks. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8), that assert that non market risks can theoretically be diversified away and that as a result they should be ignored. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 18.

Errors 176 through 315 - It is well established that *“when determining whether a claim is obvious, an examiner must make ‘a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.’* *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). Thus, ‘obviousness requires a suggestion of all limitations in a claim.’ CFMT, Inc. v. Yieldup Intern. Corp., 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). Furthermore, the Board of Patent Appeal and Interferences recently confirmed (*In re Wada and Murphy*, Appeal No. 2007- 3733) that a proper, post KSR obviousness determination still requires that an examiner must make *“a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.”* *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). In other words, obviousness still requires a suggestion of all the limitations in a claim. Errors in the claim rejections caused by the apparent failure to acknowledge the fact that the cited documents do not teach one or more limitations of the claimed invention include:

Errors #176 through #301) Failure to acknowledge the fact that the cited documents do

not teach or suggest one or more limitations of claim 11 (affects claims 12, 13, 14, 15, 16, 17, 18 and 19), including:

- a) establish a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization where each matrix cell is defined by a segment of value and an element of value or an external factor (#176 through #184),
- b) integrate data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions (#185 through #193),
- c) transform at least part of said integrated data into an impact summary for each of one or more elements of value by using a series of models (#194 through #202),
- d) transform at least part of said integrated data into an impact summary for each of one or more external factors by using a series of models (#203 through #211),
- e) quantify an impact by item of the elements of value on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input (#212 through #220),
- f) quantify an impact by item of the external factors on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input (#221 through #229),
- g) identify one or more scenarios (#230 through #238),
- h) identify one or more scenarios and determine an expected range of values for each impact summary under each scenario (#239 through #247),
- i) simulate an organization financial performance using said matrix and the expected range of values for the impact summaries in order to quantify a total organization risk by item (#248 through #256),
- j) identify one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using a mixed integer non linear optimization analysis (#257 through #265)
- k) outputting element of value impacts, external factor impacts, total organization risk and identified changes by item (#266 through #274),
- l) where the system links impact summaries together when they are not independent (#275 through #283),
- m) identify and output one or more item level changes that will optimize a total organization risk for each of one or more scenarios (#284 through #292), and
- n) identify and output one or more item level changes that will optimize a total organization value for each of one or more scenarios (#293 through #301).

Error #302) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 12, including: *where an organization is a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration.*

Error #303) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 13, including: *where one or more aspects of an organization return are selected from the group consisting of alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, information technology return, intellectual property return, market sentiment return, partnership return, process return, production equipment return, real option return, vendor return and combinations thereof.*

Error #304) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 14, including: *support for financial performance management by segment of value, element of value, enterprise and combinations thereof.*

Errors #305) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 16, including: *where one or more elements of value are selected from the group consisting of: brands, channels, customers, vendors and combinations thereof.*

Error #306) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 17, including: *wherein a segment of value is a current operation.*

Error #307) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 17, including: *wherein a segment of value is derivatives.*

Error #308) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 17, including: *wherein a segment of value is real options.*

Error #309) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 17, including: *wherein a segment of value is market sentiment.*

Error #310) Failure to acknowledge the fact that the cited documents do not teach or

suggest one or more limitations of claim 17, including: *wherein a segment of value is selected from the group consisting of current operation, derivatives, investments, real options, market sentiment and combinations thereof.*

Error #311) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 18, including: *wherein risks are variability risks.*

Error #312) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 18, including: *wherein risks are event risks.*

Error #313) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 18, including: *wherein risks are contingent liabilities.*

Error #314) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 18, including: *wherein one or more risks are selected from the group consisting of variability risks, contingent liabilities, market volatility risks, event risks and combinations thereof.*

Error #315) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 19, including: *wherein the current operation segment of value can be further subdivided by component of value where the components of value are revenue, expense or capital change.*

**Errors 316 through 324** It is well established that "*in order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.*" *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992). Errors 316 through 324 arise from the fact that the cited references are not reasonably pertinent to the claimed invention as they relate to the optimization of a portfolio of securities (Peters) and the optimization of bids for portfolios of financial assets (Messmer). As is well known to those of average skill in the art, the optimization of financial performance of an organization requires consideration of a number of factors that do not need to be considered when managing or bidding for a portfolio of financial assets including:

- a) the fact that the elements of value and items of the organization can not be bought and/or sold as they can in a portfolio of securities and/or financial assets,

- b) the fact that the return from the elements of value and items of the organization are generally unknown,
- c) the fact that the elements of value and items of the organization may interact and that this interaction may affect their value and the value of the organization,
- d) the fact that the organization may have real options for growth that need to be evaluated and managed,
- e) the fact that the organization generally has to take specific actions to manage the risks that the Peter's invention implicitly assumes are managed by an investor,
- f) the fact that the organization may have a current operation that needs to be evaluated and managed,
- g) the fact that many of the risks associated with the elements of value and items of the organization are unknown,
- h) the fact that the organization may have to take specific actions to manage risks that the Messmer invention does not face as the evaluated investments represent financial interests in real property instead of real property,
- i) the fact that the organization may have derivatives that need to be evaluated and managed,
- j) the fact that the value of the elements of value and items of the organization are generally unknown,
- k) data describing the performance of different elements of value and items is often contained in a plurality of internal systems, and
- l) data describing external factors is not generally available from internal systems and must be obtained from other sources.

Furthermore, the primary reference relies on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8) which includes the now discredited capital asset pricing model and efficient market hypothesis. Because these teachings cannot explain security market behavior over the last 5, 10, 15, 20, 25 or 40 years (see Evidence Appendix, pages 77 through 79) they are not pertinent to the evaluation and management of financial assets that are traded in one or more markets, let alone the evaluation and management of the items and element of value (of an organization) for which no market exists. Because the cited references are not pertinent to the claimed invention, the *prima facie* case of obviousness cannot be established. Affects all claims.

Errors 325 through 360 – It is well established that when *"the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima*

*facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)". Errors in the claim rejections caused by the apparent failure to acknowledge the fact that changes in the principles of operation of Peters will be required to replicate the invention described in claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19 include:*

Errors #325 through #333 One principle of operation that Peters relies on is the well known use of historical returns by asset class to identify an optimal portfolio (see Peters, paragraph 25). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that returns are a function of element of value performance and external factors and that the expected returns need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. Changing to the claimed method for determining returns would be a change in a principle of operation of the Peters invention. Affects all claims.

Errors #334 through #342 A second principle of operation that Peters relies on is the each asset generates its own return (see Peters, paragraph 25). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention teaches and relies on the fact that items (and elements of value) generate segment of value returns. Changing to the claimed model of return generation would be a change in a principle of operation of the Peters invention. Affects all claims.

Error #343 through #351 A third principle of operation that Peters relies on is that risk is the standard deviation in returns based on historical averages (see Peters, FIG. 14). This principle of operation would have to be changed to replicate the functionality of the claimed invention which relies on the fact that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). Changing to rely on the claimed definition of risk would be a change in a principle of operation of the Peters invention. Affects all claims.

Error #352 through #360 A fourth principle of operation that Peters relies on is mean variance optimization of portfolio value adjusted for risk and geographic preferences (see Peters, abstract and paragraph 29). This principle of operation would have to be changed to replicate the functionality of the claimed invention which identifies item level changes that will optimize organization return for a specific scenario. Changing to rely on the claimed type of optimization would be a change in a principle of operation of the Peters invention. Affects all claims.

Because the required modification of Peters would change several of its principles of operation, the *prima facie* case of obviousness cannot be properly made.

**Errors 361 through 405** – Errors in the claim rejections caused by the apparent failure to acknowledge the fact that changes in the principles of operation of Messmer will be required to replicate the invention described in claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19 include:

Errors #361 through #369) One principle of operation that Messmer relies on is the well known use of rules (see both Brown references) to identify the value of a group of assets or an asset (see Messmer, paragraphs 23 and 27). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that returns and value are a function of element of value performance and external factors and that returns and value need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. These models are needed to support the risk analysis and return optimization. Changing to the claimed method for determining returns would be a change in a principle of operation of the Messmer invention. Affects all claims.

Errors #370 through #378) A second principle of operation that Messmer relies on is the well known use of the similarity to characteristics of an asset with a known value (see Jost) to identify the value of a group of assets or an asset (see Messmer, paragraph 30). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that returns and value are a function of element of value performance and external factors and that returns and value need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. These models are needed to support the risk analysis and return optimization. Changing to the claimed method for determining returns would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #379 through #387) A third principle of operation that Messmer relies on is the well known assumption that risk is the standard deviation in the internal rate of return (see Messmer, paragraph 90). This principle of operation would have to be changed to replicate the functionality of the claimed invention which relies on the fact that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification).

Changing to rely on the claimed definition of risk would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #388 through #396 A fourth principle of operation that Messmer relies on stochastic optimization (see Messmer, paragraph 58). This principle of operation would have to be changed to replicate the functionality of the claimed invention which identifies changes that will optimize organization return for a specific scenario. Changing to rely on the claimed type of optimization would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #397 through #405 A fifth principle of operation that Messmer relies on is the separate evaluation of all variables associated with an asset (see Messmer, paragraph 58) and their use in developing models of actual asset value. This principle of operation would have to be changed to replicate the functionality of the claimed invention which creates and uses summaries of each element of value, external factor and item for use in creating statistical models of contribution to the segments of value. Changing Messmer to rely on an analysis of data summaries in statistical models of segments of value would be a change in a principle of operation of the Messmer invention. Affects all claims.

Because the required modification of Messmer would change several of its principles of operation, the *prima facie* case of obviousness cannot be properly made.

**Errors 406 through 414** – It is well established that *when a modification of a reference destroys the intent, purpose or function of an invention such a proposed modification is not proper and the prima facie cause of obviousness cannot be properly made (In re Gordon 733 F.2d 900, 221 U.S.PQ 1125 Fed Circuit 1984)*. The function, intent and purpose of the invention described by Peters is to identify the asset class changes required to support the mean variance optimization of portfolio value adjusted for risk and geographic preferences (see Peters, abstract and paragraph 29). By way of contrast, the claimed invention identifies item level changes that optimize organization return for a specific scenario. Modifying the Peters invention to use the claimed optimization method would destroy its ability to perform its intended function. Because the required modification of Peters would destroy its ability to perform its intended function, the *prima facie* case of obviousness cannot be properly made. Affects all claims

**Errors 415 through 423** – *The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting In re Kahn 41 stated that “[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead,*

*there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness (KSR, 550 U.S. at I, 82 USPQ2d at 1396)."* In spite of this well known requirement, the Examiner has not provided the required explanation. In particular, the Examiner has not explained what would motivate someone of average skill in the art to destroy the functionality of the Peters invention and modify the principles of operation of both Messmer and Peters as discussed under errors 325 through 414. This explanation is particularly important when one considers that Messmer and Peters teach away from all claimed methods and/or fail to teach or suggest almost every claim limitation as discussed under errors 1 through 324. In place of an explanation with articulated reasoning and a rational underpinning the Examiner has reached a conclusion of obviousness on the basis of several hundred errors in the facts and the law. Because no rational underpinning has been provided to support the legal conclusion of obviousness, the prima facie case of obviousness cannot be properly established.  
Affects all claims.

**Errors 424 through 459** – The claim rejections are based on 35 U.S.C. §103(a) which states: *A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title [35 USC 102], if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.* Errors in the claim rejections caused by the apparent failure to meet any of the statutory requirements for claim rejection include:

**Errors #424 through #432**) Failure to acknowledge the fact that the cited documents fail to teach or suggest the subject matter as whole. As illustrated by the preceding discussion, the obviousness rejections appear to be based of a non-existent standard for obviousness "mentions the same word as another document" instead of "teaches or suggests the subject matter as a whole" as there is no aspect of the rejected claims that is taught or suggested by the cited documents. It is also well established that the "Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art." *In re Lowry*, 32 F.3d 1579, 1582 (Fed. Cir. 1994). As detailed under errors 1 through 423, it does not appear that any of the claim limitations were actually considered.

**Errors #433 through #441**) Failure to acknowledge the fact that the claim rejections have been authored by an individual(s) who appears to lack the level of skill in the art required

to author such rejections. It is well established that the "*hypothetical 'person having ordinary skill in the art' to which the claimed subject matter pertains would, of necessity have the capability of understanding the scientific and engineering principles applicable to the pertinent art*" *Ex parte Hiyamizu*, 10 USPQ2d 1393, 1394 (Bd. Pat. App. & Inter. 1988). It is unlikely that anyone who understood the scientific and engineering principles applicable to the pertinent art would ever suggest Peters or Messmer as a reference in support of an obviousness rejection for the claimed inventions for the reasons described previously under errors 1 through 432.

Errors #442 through #450) Failure to acknowledge the fact that the claim rejections are based on apparent misrepresentations regarding the teachings of the cited documents. This apparent misrepresentation may be a product of the fact that the Examiner does not appear to have the requisite level of skill in the relevant arts (see Errors #433 through #441).

Errors #451 through #459) Failure to acknowledge the special meaning given to the word "risk" and the terms "matrix of value" and "segment of value". It is well established that "*words of the claim are generally given their ordinary and customary meaning, unless it appears from the written description that they were used differently by the applicant*. See *Teleflex Inc. v. Ficosa North America Corp.*, 299 F.3d 1313, 1325, 63 USPQ2d 1374, 1381 (Fed. Cir. 2002), *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342, 60 USPQ2d 1851, 1854 (Fed. Cir. 2001), and MPEP § 2111.01. The word "risk" was given a particular meaning in the specification (i.e. Table 53, on page 86 of the specification). Segments of value were defined in several places including the second paragraph on page 5 of the specification. The matrix of value is also defined in several places including the first paragraph of page 7 and Table 5 on page 8 of the specification.

**Errors 460 through 477 –** In *Dickinson v. Zurko*, 119 S. Ct. 1816, 50 USPQ2d 1930 (1999), the Supreme Court held that the appropriate standard of review of U.S.P.T.O. findings are the standards set forth in the Administrative Procedure Act ("APA") at 5 U.S.C. 706 (1994). The APA provides two standards for review – an arbitrary and capricious standard and a substantial evidence standard. Errors in the claim rejections caused by the apparent failure to meet any of the requirements of the APA include:

Errors #460 through #468) Failure to acknowledge the fact that the claim rejections fail under the substantial evidence standard. Errors 1 through 459 clearly show that the relevant Office Action fails to provide even a scintilla of evidence to support the

obviousness rejections of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19 and that as a result the rejections fail to meet the substantial evidence standard.

Errors #469 through #477) Failure to acknowledge the fact that the claim rejections fail under the arbitrary and capricious standard. The Appellant respectfully submits that the obviousness rejection of claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19 also fails to pass the arbitrary and capricious test for a number of reasons including the fact that:

- a) as detailed above, the references cited by the Examiner provide substantial evidence of novelty, non-obviousness and newness of the rejected claims (see errors 1 through 414);
- b) no rational underpinning has been provided to support the legal conclusion of obviousness (see error 415 through 423),
- c) there is no rational connection between the statutory requirements for an obviousness rejection, the agency fact findings and the rejection of the claims (see errors 424 through 459), and
- d) prior agency fact-findings have shown that 35 U.S.C. 103 requirements for non-obviousness are apparently not always considered during the prosecution and allowance of large company patent applications (i.e. U.S. Patent 7,028,005). This apparently unequal application of the law comprises an apparent violation of 35 USC 3.

Because the claim rejections do not meet either standard of the APA, the *prima facie* case of obviousness cannot be properly established.

Summarizing the above, the Appellant respectfully submits that the Examiner has failed to produce the evidence required to satisfy the requirements of the APA and/or establish a *prima facie* case of obviousness for a single claim. These failures provide additional evidence that the claimed invention is new, novel and non-obvious.

**Issue 3 – Whether claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 are obvious under 35 USC 103(a) given Peters in view of Messmer?**

The claims are patentable because the claim rejections are based on a number of errors in the facts and in the law. Because of these errors, the cited combination of teachings (Peters and Messmer) and the arguments related to the cited combination of teachings fail to establish a *prima facie* case of obviousness for every rejected claim as detailed below.

**Errors 1 through 110** – It is well established that: *“in determining the difference between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious but whether the claimed invention as a whole would have been obvious (Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983).”* Furthermore, it is well established that: *A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).* Errors in the claim rejections caused by the apparent failure to acknowledge the fact that the cited references teach away from the invention described in claim 11, claim 12, claim 13, claim 14, claim 15, claim 16, claim 17, claim 18 and claim 19 include:

**Errors #1 through #6)** A failure to acknowledge the fact that the Peters reference teaches away from the claimed quantification of an impact of the elements of value and the external factors on a return from each segment of value by analyzing data with a series of models. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches away from using a series of models to quantify returns as a function of elements of value and external factors by teaching that expected returns are obtained from historical data that lists actual returns (see Peters, paragraph 25) and that each item (aka asset) generates a return independently. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

**Errors #7 through #12)** A failure to acknowledge the fact that the Messmer reference teaches away from the claimed quantification of an impact of the elements of value and the external factors on a return from each segment of value by analyzing data with a series of models. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches that instead of using a series of models to quantify returns as a function of elements of value and external factors, expected returns are identified based on forecast recovery rates that are identified using some unknown process (see Messmer, paragraphs 66, 85 and 92) and that each item (aka asset) generates a return independently. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #13 trough #18) A failure to acknowledge the fact that the Peters reference teaches away from the claimed definition of risk. Peters teaches away from every aspect of the claimed invention. The claimed invention teaches is that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). By way of contrast Peters teaches that risk is the standard deviation in returns based on historical averages (see Peters, FIG. 14). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #19 through #24) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed definition of risk. Messmer teaches away from every aspect of the claimed invention. The claimed invention teaches is that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). By way of contrast Messmer teaches that risk is the standard deviation in the internal rate of return and/or variance in payback period (see Messmer, paragraph 90). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #25 through #30) A failure to acknowledge the fact that the Peters reference teaches away from the claimed simulation of organization financial performance with a matrix of market value to quantify total organization risk by item. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches that instead of using simulation, risk ratings are based on historical data series for asset classes and their respective correlations (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #31 through #36) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed simulation of organization financial performance with a matrix of market value to quantify total organization risk by item. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches that asset values are established by using forecast recovery rates in one of four underwriting processes (see Messmer, Fig. 10):

- a) full underwriting – where an underwriter establishes the value of each asset using pre-established rules (see Messmer, paragraphs 23 and 27),
- b) 100% sample underwriting – where an underwriter establishes the value of a group of 100% of the assets and the value of each asset is established using a rule (see Messmer, paragraph 30),
- c) partial sample underwriting - involves forming a cluster sample group and one hundred percent sampling of a representative group from within a cluster of the groups being sampled and random sampling of the other groups in the cluster. The underwriter establishes the value of the representative group and the remaining groups are valued on the basis of extrapolations from the representative group valuation. Individual assets are valued on the basis of their tranche group (see Messmer, paragraph 30), and
- d) inferred valuation – involves valuing groups of assets based on their similarity to assets underwritten using process a), b) or c) outlined above (see Messmer, paragraphs 32 through 49).

As part of these processes risk scores: are assigned based on subjective underwriter assessments, inferred from the similarity of un-scored assets to assets with assigned risk scores, or an inferred from the data (see Messmer, FIG. 7, paragraph 32 and paragraph 62). Simulation is used for developing bidding strategies and selecting sample sizes for underwriting but it is not used for quantifying risk. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #37 through #42) A failure to acknowledge the fact that the Peters reference teaches away from the claimed item level analysis. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches that instead of analyzing the value and risk of individual items, risk and expected returns are identified on the basis data for asset classes and their respective correlations (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #43 through #48) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed item level analysis. Messmer teaches away from every

aspect of the claimed invention. In particular, Messmer teaches that all automated analyses are completed at the tranche level (see Messmer, paragraphs 3 through 6). By teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #49 through #54) A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization method. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed non-linear, mixed integer optimization of return (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #55 through #60) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed optimization method. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the use of stochastic optimization in place of the claimed scenario based optimization (see Messmer, paragraph 58). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #61 through #66) A failure to acknowledge the fact that Peters teaches away from the claimed optimization for specific scenarios. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization based on historical returns instead of identifying an optimal set of changes based on a future scenario (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #67 through #72) A failure to acknowledge the fact that Peters teaches away from the claimed evaluation of external factor impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total, historical return by asset class instead of identifying the external factors that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach away from the

claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #73 through #78) A failure to acknowledge the fact that Peters teaches away from the claimed evaluation of element of value impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total, historical return by asset class instead of identifying the elements of value and items that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #79 through #84) A failure to acknowledge the fact that the Peters reference teaches away from the claimed use of summaries of data to evaluate element of value and external factor impact on returns. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of total, historical return by asset class instead of identifying the elements of value and external factors that drive returns (see Peters, paragraph 25). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #85 through #90) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed use of summaries of data as inputs to statistical models. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the analysis of every attribute for each asset and the use of "dummy variables" (see Messmer, paragraph 58) in developing models of actual asset value. By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #91 through #96) A failure to acknowledge the fact that the Peters reference teaches away from the claimed integration of data from a plurality of systems. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of a single database and user input of portfolio holdings (see Peters, paragraph 22). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #97 through #102) A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization of risk. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed non-linear, mixed integer optimization of risk (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #103 through #108) A failure to acknowledge the fact that the Peters reference teaches away from the claimed optimization of value. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the use of mean variance optimization of value adjusted for risk and geographic preferences in place of the claimed non-linear, mixed integer optimization of value (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #104) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches the analysis and optimization of an investment portfolio instead of teaching the analysis and optimization of any type of organization (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 24.

Error #105) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed analysis of a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the analysis and optimization of bids for tranches of financial assets instead of teaching the analysis and optimization of any type of organization (see Messmer, abstract). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 24.

Error #106) A failure to acknowledge the fact that the Peters reference teaches away from

the claimed analysis of alliance risk, brand risk, channel risk, contingent liabilities, customer risk, current operation risk, derivative risk, employee risk, enterprise risk, external factor risk, event risk, intellectual property risk, investment risk, market sentiment risk, partnership risk, process risk, production equipment risk, real option risk, vendor risk, alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, intellectual property return, investment return, partnership return, process return, production equipment return, real option return, vendor return, alliance value, brand value, channel value, customer value, current operation value, derivative value, employee value, intellectual property value, investment value, market sentiment value, partnership value, process value, production equipment value, real option value, vendor value. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8), that exclusively focus on investor return, that have been modified to incorporate risk and geographic preferences (see Peters, paragraph 29). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 25.

Error #107) A failure to acknowledge the fact that the Messmer reference teaches away from the claimed analysis of alliance risk, brand risk, channel risk, contingent liabilities, customer risk, current operation risk, derivative risk, employee risk, enterprise risk, external factor risk, event risk, intellectual property risk, investment risk, market sentiment risk, partnership risk, process risk, production equipment risk, real option risk, vendor risk, alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, intellectual property return, investment return, partnership return, process return, production equipment return, real option return, vendor return, alliance value, brand value, channel value, customer value, current operation value, derivative value, employee value, intellectual property value, investment value, market sentiment value, partnership value, process value, production equipment value, real option value, vendor value and combinations thereof. Messmer teaches away from every aspect of the claimed invention. In particular, Messmer teaches the development of a competitive bidding strategy that is expected to optimize a single type of return - investor return (see Messmer, paragraph 56). By exclusively teaching methods that teach away from the claimed invention, Messmer provides additional evidence of the novelty, non-obviousness and newness of claim 25.

Error #108) A failure to acknowledge the fact that the Peters reference teaches away from implementing the one or more changes in an automated fashion. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches that the customers must make the decision as to whether or not to implement suggested changes (see Peters, paragraph 94). By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 26.

Error #109) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of a real option segment of value. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8), that exclusively focus on investor return. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 28.

Error #110) A failure to acknowledge the fact that the Peters reference teaches away from the claimed analysis of a market sentiment segment of value. Peters teaches away from every aspect of the claimed invention. In particular, Peters teaches a reliance on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8) that rely on the now discredited efficient market hypothesis. The efficient market hypothesis teaches that there is no market sentiment. By exclusively teaching methods that teach away from the claimed invention, Peters provides additional evidence of the novelty, non-obviousness and newness of claim 28.

Errors 111 through 203 - It is well established that *“when determining whether a claim is obvious, an examiner must make a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.”* *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). Thus, ‘obviousness requires a suggestion of all limitations in a claim.’ CFMT, Inc. v. Yieldup Intern. Corp., 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)). Furthermore, the Board of Patent Appeal and Interferences recently confirmed (*In re Wada and Murphy*, Appeal No. 2007- 3733) that a proper, post KSR obviousness determination still requires that an examiner must make “a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.” *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (*emphasis added*). In other words, obviousness still requires a suggestion of all the limitations in a claim. Errors in the claim rejections caused by

the apparent failure to acknowledge the fact that the cited documents do not teach one or more limitations of the claimed invention include:

Errors #111 through #194) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 23 (affects claims 24, 25, 26, 27 and 28), including:

- a) establish a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization where each matrix cell is defined by a segment of value and an element of value or an external factor (#111 through #116),
- b) integrate data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions (#117 through #122),
- c) transform at least part of said integrated data into an impact summary for each of one or more elements of value by using a series of models (#123 through #128),
- d) transform at least part of said integrated data into an impact summary for each of one or more external factors by using a series of models (#129 through #134),
- e) quantify an impact by item of the elements of value on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input (#135 through #140),
- f) quantify an impact by item of the external factors on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input (#141 through #146),
- g) identify one or more scenarios (#147 through #152),
- h) identify one or more scenarios and determine an expected range of values for each impact summary under each scenario (#153 through #158),
- i) simulate an organization financial performance using said matrix and the expected range of values for the impact summaries in order to quantify a total organization risk by item (#159 through #164),
- j) identify one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using a mixed integer non linear optimization analysis (#165 through #170),
- k) outputting element of value impacts, external factor impacts, total organization risk and identified changes by item (#171 through #176),
- l) where the system links impact summaries together when they are not independent (#177 through #182),
- m) identify and output one or more item level changes that will optimize a total

organization risk for each of one or more scenarios (#183 through #188), and  
n) identify and output one or more item level changes that will optimize a total organization value for each of one or more scenarios (#189 through #194).

Error #195) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 24, including: *where an organization is a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration.*

Error #196) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 25, including: *where the one or more aspects of organization risk, return and value that are optionally optimized are selected from the group consisting of alliance risk, brand risk, channel risk, contingent liabilities, customer risk, current operation risk, derivative risk, employee risk, enterprise risk, external factor risk, event risk, intellectual property risk, investment risk, market sentiment risk, partnership risk, process risk, production equipment risk, real option risk, vendor risk, alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, intellectual property return, investment return, partnership return, process return, production equipment return, real option return, vendor return, alliance value, brand value, channel value, customer value, current operation value, derivative value, employee value, intellectual property value, investment value, market sentiment value, partnership value, process value, production equipment value, real option value, vendor value and combinations thereof.*

Error #197) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 26, including: *a method that further comprises implementing the one or more changes in an automated fashion.*

Errors #198) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 27, including: *where implementation includes activities that are selected from the group consisting of narrow system changes, changes in operation and combinations thereof.*

Error #199) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 28, including: *wherein a segment of value is a current operation.*

Error #200) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 28, including: *wherein a segment of value is*

derivatives.

Error #201) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 28, including: *wherein a segment of value is real options.*

Error #202) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 28, including: *wherein a segment of value is market sentiment.*

Error #203) Failure to acknowledge the fact that the cited documents do not teach or suggest one or more limitations of claim 28, including: *wherein a segment of value is selected from the group consisting of current operation, derivatives, investments, real options, market sentiment and combinations thereof.*

**Errors 204 through 209** It is well established that "*in order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.*" *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992). Errors 204 through 209 arise from the fact that the cited references are not reasonably pertinent to the claimed invention as they relate to the optimization of a portfolio of securities (Peters) and the optimization of bids for portfolios of financial assets (Messmer). As is well known to those of average skill in the relevant arts, the optimization of financial performance of an organization requires consideration of a number of factors that do not need to be considered when managing or bidding for a portfolio of financial assets including:

- a) the fact that the elements of value and items of the organization can not be bought and/or sold as they can in a portfolio of securities and/or financial assets,
- b) the fact that the return from the elements of value and items of the organization are generally unknown,
- c) the fact that the elements of value and items of the organization may interact and that this interaction may affect their value and the value of the organization,
- d) the fact that the organization may have real options for growth that need to be evaluated and managed,
- e) the fact that the organization generally has to take specific actions to manage the risks that the Peter's invention implicitly assumes are managed by an investor,

- f) the fact that the organization may have a current operation that needs to be evaluated and managed,
- g) the fact that many of the risks associated with the elements of value and items of the organization are unknown,
- h) the fact that the organization may have to take specific actions to manage risks that the Messmer invention does not face as the evaluated investments represent financial interests in real property instead of real property,
- i) the fact that the organization may have derivatives that need to be evaluated and managed,
- j) the fact that the value of the elements of value and items of the organization are generally unknown,
- k) data describing the performance of different elements of value and items is often contained in a plurality of internal systems, and
- l) data describing external factors is not generally available from internal systems and must be obtained from other sources.

Furthermore, the primary reference relies on the teachings of Dr. Harold Markowitz (see Peters, paragraph 8) which includes the now discredited capital asset pricing model and efficient market hypothesis. Because these teachings cannot explain security market behavior over the last 5, 10, 15, 20, 25 or 40 years (see Evidence Appendix, pages 77 through 79) they are not pertinent to the evaluation and management of financial assets that are traded in one or more markets, let alone the evaluation and management of the items and element of value (of an organization) for which no market exists. Because the cited references are not pertinent to the claimed invention, the *prima facie* case of obviousness cannot be established. Affects all claims.

Errors 210 through 233 – It is well established that when *"the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)"*. Errors in the claim rejections caused by the apparent failure to acknowledge the fact that changes in the principles of operation of Peters will be required to replicate the invention described in claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 include:

Errors #210 through #215) One principle of operation that Peters relies on is the well known use of historical returns by asset class to identify an optimal portfolio (see Peters, paragraph 25). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that

returns are a function of element of value performance and external factors and that the expected returns need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. Changing to the claimed method for determining returns would be a change in a principle of operation of the Peters invention. Affects all claims.

Errors #216 through #221 A second principle of operation that Peters relies on is that each asset generates its own return (see Peters, paragraph 25). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention teaches and relies on the fact that items (and elements of value) generate segment of value returns. Changing to the claimed model of return generation would be a change in a principle of operation of the Peters invention. Affects all claims.

Error #222 through #227 A third principle of operation that Peters relies on is that risk is the standard deviation in returns based on historical averages (see Peters, FIG. 14). This principle of operation would have to be changed to replicate the functionality of the claimed invention which relies on the fact that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). Changing to rely on the claimed definition of risk would be a change in a principle of operation of the Peters invention. Affects all claims.

Error #228 through #233 A fourth principle of operation that Peters relies on is mean variance optimization of portfolio value adjusted for risk and geographic preferences (see Peters, abstract and paragraph 29). This principle of operation would have to be changed to replicate the functionality of the claimed invention which identifies item level changes that will optimize organization return for a specific scenario. Changing to rely on the claimed type of optimization would be a change in a principle of operation of the Peters invention. Affects all claims.

Because the required modification of Peters would change several of its principles of operation, the *prima facie* case of obviousness cannot be properly made.

Errors 234 through 263 – Errors in the claim rejections caused by the apparent failure to acknowledge the fact that changes in the principles of operation of Messmer will be required to replicate the invention described in claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 include:

Errors #234 through #239 One principle of operation that Messmer relies on is the well known use of rules (see both Brown references) to identify the value of a group of assets

or an asset (see Messmer, paragraphs 23 and 27). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that returns and value are a function of element of value performance and external factors and that returns and value need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. These models are needed to support the risk analysis and return optimization. Changing to the claimed method for determining returns would be a change in a principle of operation of the Messmer invention. Affects all claims.

Errors #240 through #245) A second principle of operation that Messmer relies on is the well known use of the similarity to characteristics of an asset with a known value (see Jost) to identify the value of a group of assets or an asset (see Messmer, paragraph 30). This principle of operation would have to be changed to replicate the functionality of the claimed invention because the claimed invention relies on the fact that returns and value are a function of element of value performance and external factors and that returns and value need to be determined by modeling. Consistent with this teaching, models are developed to identify the return contribution of each element of value and external factor. These models are needed to support the risk analysis and return optimization. Changing to the claimed method for determining returns would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #246 through #251) A third principle of operation that Messmer relies on is the well known assumption that risk is the standard deviation in the internal rate of return (see Messmer, paragraph 90). This principle of operation would have to be changed to replicate the functionality of the claimed invention which relies on the fact that risk is the reduction in value under a specific scenario (i.e. Table 53, on page 86 of the specification). Changing to rely on the claimed definition of risk would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #252 through #257) A fourth principle of operation that Messmer relies on stochastic optimization (see Messmer, paragraph 58). This principle of operation would have to be changed to replicate the functionality of the claimed invention which identifies changes that will optimize organization return for a specific scenario. Changing to rely on the claimed type of optimization would be a change in a principle of operation of the Messmer invention. Affects all claims.

Error #258 through #263) A fifth principle of operation that Messmer relies on is the separate evaluation of all variables associated with an asset (see Messmer, paragraph 58) and their use in developing models of actual asset value. This principle of operation would have to be changed to replicate the functionality of the claimed invention which creates and uses summaries of each element of value, external factor and item for use in creating statistical models of contribution to the segments of value. Changing Messmer to rely on an analysis of data summaries in statistical models of segments of value would be a change in a principle of operation of the Messmer invention. Affects all claims.

Because the required modification of Messmer would change several of its principles of operation, the *prima facie* case of obviousness cannot be properly made.

Errors 264 through 269 – It is well established that *when a modification of a reference destroys the intent, purpose or function of an invention such a proposed modification is not proper and the prima facie cause of obviousness cannot be properly made (In re Gordon 733 F.2d 900, 221 U.S.P.Q 1125 Fed Circuit 1984)*. The function, intent and purpose of the invention described by Peters is to identify the asset class changes required to support the mean variance optimization of portfolio value adjusted for risk and geographic preferences (see Peters, abstract and paragraph 29). By way of contrast, the claimed invention identifies item level changes that optimize organization return for a specific scenario. Modifying the Peters invention to use the claimed optimization method would destroy its ability to perform its intended function. Because the required modification of Peters would destroy its ability to perform its intended function, the *prima facie* case of obviousness cannot be properly made. Affects all claims

Errors 270 through 275 – *The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting In re Kahn 41 stated that “[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness (KSR, 550 U.S. at I, 82 USPQ2d at 1396).”* In spite of this well known requirement, the Examiner has not provided the required explanation. In particular, the Examiner has not explained what would motivate someone of average skill in the art to destroy the functionality of the Peters invention and modify the principles of operation of both Messmer and Peters as discussed under errors 210 through 269. This explanation is particularly important when one considers that Messmer and Peters teach away from all claimed methods and/or fail to teach or suggest almost every claim limitation as discussed under errors 1 through 209. In place of an explanation with articulated reasoning and a rational underpinning the

Examiner has reached a conclusion of obviousness on the basis of several hundred errors in the facts and the law. Because no rational underpinning has been provided to support the legal conclusion of obviousness, the prima facie case of obviousness cannot be properly established. Affects all claims.

Errors 276 through 299 – The claim rejections are based on 35 U.S.C. §103(a) which states: *A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title [35 USC 102], if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.* Errors in the claim rejections caused by the apparent failure to meet any of the statutory requirements for claim rejection include:

Errors #276 through #281 Failure to acknowledge the fact that the cited documents fail to teach or suggest the subject matter as whole. As illustrated by the preceding discussion, the obviousness rejections appear to be based of a non-existent standard for obviousness "mentions the same word as another document" instead of "teaches or suggests the subject matter as a whole" as there is no aspect of the rejected claims that is taught or suggested by the cited documents. It is also well established that the "Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art." *In re Lowry*, 32 F.3d 1579, 1582 (Fed. Cir. 1994). As detailed under errors 1 through 275, it does not appear that any of the claim limitations were actually considered.

Errors #282 through #287 Failure to acknowledge the fact that the claim rejections have been authored by an individual(s) who appears to lack the level of skill in the art required to author such rejections. It is well established that the "hypothetical 'person having ordinary skill in the art' to which the claimed subject matter pertains would, of necessity have the capability of understanding the scientific and engineering principles applicable to the pertinent art" *Ex parte Hiyamizu*, 10 USPQ2d 1393, 1394 (Bd. Pat. App. & Int'l. 1988). It is unlikely that anyone who understood the scientific and engineering principles applicable to the pertinent art would ever suggest Peters or Messmer as a reference in support of an obviousness rejection for the claimed inventions for the reasons described previously under errors 1 through 281.

Errors #288 through #293 Failure to acknowledge the fact that the claim rejections are

based on apparent misrepresentations regarding the teachings of the cited documents. This apparent misrepresentation may be a product of the fact that the Examiner does not appear to have the requisite level of skill in the relevant arts (see Errors #282 through #287).

Errors #294 through #299) Failure to acknowledge the special meaning given to the word "risk" and the terms "matrix of value" and "segment of value". It is well established that *"words of the claim are generally given their ordinary and customary meaning, unless it appears from the written description that they were used differently by the applicant.* See *Teleflex Inc. v. Ficosa North America Corp.*, 299 F.3d 1313, 1325, 63 USPQ2d 1374, 1381 (Fed. Cir. 2002), *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342, 60 USPQ2d 1851, 1854 (Fed. Cir. 2001), and *MPEP* § 2111.01. The word "risk" was given a particular meaning in the specification (i.e. Table 53, on page 86 of the specification). Segments of value were defined in several places including the second paragraph on page 5 of the specification. The matrix of value is also defined in several places including the first paragraph of page 7 and Table 5 on page 8 of the specification.

Errors 300 through 311 – In *Dickinson v. Zurko*, 119 S. Ct. 1816, 50 USPQ2d 1930 (1999), the Supreme Court held that the appropriate standard of review of U.S.P.T.O. findings are the standards set forth in the Administrative Procedure Act ("APA") at 5 U.S.C. 706 (1994). The APA provides two standards for review – an arbitrary and capricious standard and a substantial evidence standard. Errors in the claim rejections caused by the apparent failure to meet any of the requirements of the APA include:

Errors #300 through #305) Failure to acknowledge the fact that the claim rejections fail under the substantial evidence standard. Errors 1 through 299 clearly show that the relevant Office Action fails to provide even a scintilla of evidence to support the obviousness rejections of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 and that as a result the rejections fail to meet the substantial evidence standard.

Errors #306 through #311) Failure to acknowledge the fact that the claim rejections fail under the arbitrary and capricious standard. The Appellant respectfully submits that the obviousness rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 also fails to pass the arbitrary and capricious test for a number of reasons including the fact that:

- a) as detailed above, the references cited by the Examiner provide substantial evidence of novelty, non-obviousness and newness of the rejected claims (see errors 1

through 269);

- b) no rational underpinning has been provided to support the legal conclusion of obviousness (see error 270 through 275),
- c) there is no rational connection between the statutory requirements for an obviousness rejection, the agency fact findings and the rejection of the claims (see errors 276 through 299), and
- d) prior agency fact-findings have shown that 35 U.S.C. 103 requirements for non-obviousness are apparently not always considered during the prosecution and allowance of large company patent applications (i.e. U.S. Patent 7,028,005). This apparently unequal application of the law comprises an apparent violation of 35 USC 3.

Because the claim rejections do not meet either standard of the APA, the *prima facie* case of obviousness cannot be properly established.

Summarizing the above, the Appellant respectfully submits that the Examiner has failed to produce the evidence required to satisfy the requirements of the APA and/or establish a *prima facie* case of obviousness for a single claim. These failures provide additional evidence that the claimed invention is new, novel and non-obvious.

**Issue 4 – Whether claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 represent statutory subject matter under 35 USC 101?**

The claims are patentable because the claim rejections are based on a number of errors in the facts and in the law. Because of these errors, the arguments presented by the Examiner fail to establish a *prima facie* case of non statutory subject matter for every rejected claim as detailed below.

**Errors 1 through 12** - It is well established that "*the burden is on the U.S.P.T.O. to set forth a *prima facie* case of unpatentability. Therefore if U.S.P.T.O. personnel determine that it is more likely than not that the claimed subject matter falls outside all of the statutory categories, they must provide an explanation.* (See, e.g., *In re Nuitjen*, Docket no. 2006-1371 (Fed. Cir. Sept. 20, 2007) (slip. Op. at 18)). Errors in the claim rejections caused by the apparent failure to establish a *prima facie* case of non statutory subject matter include:

**Error #1 through #6** The rejection of independent claim 23 is based on a conclusory statement that the invention described in the claim does not include a transformation. The remaining claims are rejected because they depend on the rejected independent claim. In rejecting the claim, the Examiner failed to explain:

- a) why the transformation of specific data into a market value matrix is not considered a transformation,
- b) why the transformation of specific data into summaries of impact for elements of value that physically exist is not considered a transformation, and/or
- c) why the transformation of specific data into summaries of external factor impact is not considered a transformation.

An explanation in this regard is particularly important given the fact that the Supreme Court and the CAFC (see Bilski, 545 F.3d 943, 88 U.S.P.Q.2d 1385 (2008)) have both found the transformation of data regarding real world activities and/or objects into a different state or thing to be statutory subject matter. The failure to provide an explanation supported to by evidence leads to the inevitable conclusion that the Examiner has failed to establish a *prima facie* case that would support a §101 rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors #7 through #12 The rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 is based on a conclusory statement that the invention described in the independent claim does not include any transformations. In rejecting the claim, the Examiner failed to explain why a transformation is required after considering the fact that the Supreme Court has specifically stated "*As in Benson, we assume that a valid process patent may issue even if it does not meet [the machine-or-transformation test]*" (*Parker v. Flook*, 437 U.S. at 588-89). The failure to provide an explanation as to why a transformation is required in view of Benson and Flook leads to the inevitable conclusion that the Examiner has failed to establish a *prima facie* case that would support a §101 rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

The *prima facie* case of non statutory subject matter has not been properly established. Recognizing this clear error in the grounds for rejection will reverse the non statutory subject matter rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors 13 through 30 – Additional errors in the rejections for non-statutory subject matter are the result of the fact that the claim rejections are based on conclusory statements that are demonstrably false. Errors in the claim rejections caused by a reliance on apparently false conclusory statements include:

Errors #13 through #18 As discussed under errors 1 through 12 of this Issue, claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 are rejected for allegedly not completing a transformation. This conclusory statement is demonstrably false as the

claimed invention transforms organization related data into a matrix of market value. Affects all claims.

Errors #19 through #24 As discussed under errors 1 through 12 of this Issue, claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 are rejected for allegedly not completing a transformation. This conclusory statement is demonstrably false as the claimed invention transforms organization related data into summaries of impact for elements of value that physically exist. Affects all claims.

Errors #25 through #30 As discussed under errors 1 through 12 of this Issue, claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 are rejected for allegedly not completing a transformation. This conclusory statement is demonstrably false as the claimed invention may transform organization related data into summaries of external factor impact. Affects all claims.

The claim rejections are improper because they are based on conclusory statements that are incorrect. Recognizing this clear error in the grounds for rejection will reverse the non statutory subject matter rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors 31 through 42 – The “*Supreme Court noted that one example of a statutory “process” is where the process steps provide a transformation or reduction of an article to a different state or thing* (*Diehr, 450 U.S. at 183, 209 USPQ at 6*). In *Alappat*, the Court held that “*data, transformed by a machine*” “*to produce a smooth waveform display*” “*constituted a practical application of an abstract idea.*” *State Street*, 149 F.3d at 1373. In *Arrhythmia*, the Court held “*the transformation of electrocardiograph signals*” “*by a machine*” “*constituted a practical application of an abstract idea.*” *Id.* Likewise, in *State Street*, the Court held that “*the transformation of data*” “*by a machine*” “*into a final share price, constitutes a practical application of a mathematical algorithm.*” *Id.* Thus, while *Diehr* involved the transformation of a tangible object – curing synthetic rubber – the Court also regards the transformation of intangible subject matter to similarly be eligible, so long as data represent some real world activity. *In re Bilski*, 545 F.3d 943, 88 U.S.P.Q.2d 1385 (2008) generally follows these prior decisions and states that the data transformed by a process must represent an object or substance that physically exists.

Errors #31 through #36 Is a failure to acknowledge that the rejected claims meet the statutory requirements for patentability. The rejected independent claim describes a process that transform data representative of an organization, external factors and elements of value that physically exist into a different state or thing: a matrix of market

value and a plurality of impact summaries. The matrix of market value has utility in organization analysis, management and simulation.

Errors #37 through #42) Failure to acknowledge the fact that the claim rejections are based on apparent misrepresentations regarding the claimed invention. These apparent misrepresentations may be a product of the fact that the Examiner does not appear to have the requisite level of skill in the relevant arts.

The claim rejections are improper because the rejected claims meet all existing statutory requirements for patent eligible subject matter and because they appear to be based on misrepresentations regarding the claimed inventions. Recognizing these clear errors in the grounds for rejection will reverse the non-statutory subject matter rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

Errors 43 through 54 – In *Dickinson v. Zurko*, 119 S. Ct. 1816, 50 USPQ2d 1930 (1999), the Supreme Court held that the appropriate standard of review of USPTO findings are the standards set forth in the Administrative Procedure Act ("APA") at 5 U.S.C. 706 (1994). The APA provides two standards for review – an arbitrary and capricious standard and a substantial evidence standard. Errors in the claim rejections caused by the apparent failure to meet any of the requirements of the APA include:

Errors #43 through #48) Failure to acknowledge the fact that the claim rejections fail under the substantial evidence standard. Errors 1 through 42 clearly show that the relevant Office Action fails to provide even a scintilla of evidence to support the non statutory subject matter rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 and that as a result the rejections fail to meet the substantial evidence standard.

Errors #49 through #54) Failure to acknowledge the fact that the claim rejections fail under the arbitrary and capricious standard. The Appellant respectfully submits that the non statutory subject matter rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28 also fails to pass the arbitrary and capricious test for a number of reasons including the fact that:

- a) no rational underpinning has been provided to support the legal conclusion of non statutory subject matter (see errors 1 through 30). In particular, there is no rational connection between the transformations completed by the claimed inventions and the statement that no transformations are being completed,
- b) there is no rational connection between the statutory requirements for non statutory

subject matter rejections and the agency fact findings (see errors 31 through 42), and c) prior agency fact-findings have shown that 35 U.S.C. 101 requirements for statutory subject matter are apparently not always considered during the prosecution and allowance of large company patent applications (i.e. U.S. Patent 7,395,236). This apparently unequal application of the law comprises an apparent violation of 35 USC 3.

Because the claim rejections do not meet either standard of the APA, the *prima facie* case of non statutory subject matter can not be properly established. Recognizing this clear error in the grounds for rejection will reverse the non statutory subject matter rejection of claim 23, claim 24, claim 25, claim 26, claim 27 and claim 28.

#### **8. Conclusion**

The Appellant notes that with respect to the prosecution of the instant application, it appears that the U.S.P.T.O. has not fully complied with the requirements set forth in the APA, 35 U.S.C. 3 and 35 U.S.C. 131. A valid patent application rejection requires substantial evidence (Gartside, 203 F.3d at 1312). As described in the preceding section, the August 19, 2009 Office Action does not contain any evidence that would support the rejection of a single claim. However, related appeals and the August 19, 2009 Office Action for the instant application do provide substantial evidence that: those authoring/signing the Office Action do not appear to understand any of the scientific and/or engineering principles applicable to the pertinent art, those authoring the Office Action do not adhere to any of the well established statutory requirements for authoring valid claim rejections, and that those authoring the Office Action appear to have based the claim rejections on the application legal standards that are not applied during the review and allowance of applications filed by larger companies.

For the reasons detailed above, the Appellant respectfully but forcefully contends that each claim is patentable. Therefore, reversal of all rejections is courteously solicited.

Respectfully submitted,

Asset Trust, Inc.

/B.J. Bennett/

B.J. Bennett, President  
Dated: October 20, 2009

## 9. Claims Appendix

1. A system for optimizing one or more aspects of organization return comprising:

a plurality of computers connected by a network each with a processor having circuitry to execute instructions; a storage device available to each processor with sequences of instructions stored therein, which when executed cause the processors to:

establish a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization and a plurality of processing stages where each matrix cell is defined by a segment of value and an element of value or an external factor,

integrate data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions,

transform at least part of said integrated data into an impact summary for each of one or more elements of value and one or more external factors by using a series of models,

quantify an impact by item of the elements of value and the external factors on a return from each segment of value by analyzing said data with a series of models that use the impact summaries as an input,

identify one or more scenarios and determine an expected range of values for each impact summary under each scenario, and

simulate an organization financial performance using said matrix and the expected range of values for the impact summaries in order to quantify a total organization risk by item and provide data useful for identifying one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using a mixed integer non linear optimization analysis before outputting said element of value impacts, external factor impacts, total organization risk and identified changes by item

where the system links impact summaries together when they are not independent and also identifies and outputs one or more item level changes that will optimize a total organization risk and a total organization value for each of one or more scenarios.

2. The system of claim 1 where an organization is a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration.
3. The system of claim 1 where one or more aspects of an organization return are selected from the group consisting of alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, information technology return, intellectual property return, investment return, market sentiment return, market return, partnership return, process return, production equipment return, real option return, vendor return and combinations thereof.
4. The system of claim 1 that optionally supports a valuation of an equity security.
5. The system of claim 1 that supports financial performance management by segment of value, element of value, enterprise and combinations thereof.
6. The system of claim 1 where one or more elements of value are selected from the group consisting of: alliances, brands, channels, customers, employees, information technology, intellectual property, partnerships, processes, vendors and combinations thereof.
7. The system of claim 6 where the elements of value can be clustered into sub-elements of value for more detailed analysis.
8. The system of claim 5 where an enterprise is a single product, a group of products, a division or a company.
9. The system of claim 1 where the segments of value are selected from the group consisting of current operation, derivatives, investments, real options, market sentiment and combinations thereof.
10. The system of claim 9 where the current operation segment of value can be further

subdivided by component of value where the components of value are revenue, expense or capital change.

11. A computer readable medium having sequences of instructions stored therein, which when executed cause the processors in at least one computer to perform an organization return management method, comprising:

establishing a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization and a plurality of processing stages,

integrating data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions,

transforming at least part of said integrated data into an impact summary for each of one or more elements of value and one or more external factors by using a series of models,

developing a market value matrix that quantifies an impact by item of the elements of value and the external factors on an organization market value by a segment of value by analyzing said organization data with a series of models that use the impact summaries as an input,

identifying one or more scenarios and determining an expected range of values for each impact summary under each scenario, and

simulating an organization financial performance using said matrix and the expected range of values for the impact summaries in order to quantify a total organization risk by item and provide data useful for optionally identifying one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using mixed integer non linear optimization analysis before outputting said element of value impacts, external factor impacts, total organization risk and identified changes, if any, by item where the method further comprises linking impact summaries together when they are dependent and optionally identifying a list of changes by item that will optimize aspects of financial performance selected from the group consisting of a total organization risk and a

total organization value.

12. The computer readable medium of claim 11 where an organization is a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration.
13. The computer readable medium of claim 11, wherein one or more aspects of an organization return are selected from the group consisting of alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, information technology return, intellectual property return, investment return, market sentiment return, partnership return, process return, production equipment return, real option return, vendor return and combinations thereof.
14. The computer readable medium of claim 11 that supports financial performance management by a segment of value, an element of value, an enterprise and combinations thereof.
15. The computer readable medium of claim 11 that optionally supports an organization security valuation.
16. The computer readable medium of claim 11, wherein one or more elements of value are selected from the group consisting of: alliances, brands, channels, customers, vendors and combinations thereof.
17. The computer readable medium of claim 11, wherein the segments of value are selected from the group consisting of current operation, derivatives, investments, real options, market sentiment and combinations thereof.
18. The computer readable medium of claim 11 wherein one or more risks are selected from the group consisting of variability risks, contingent liabilities, market volatility risks, event risks

and combinations thereof.

19. The computer readable medium of claim 11, wherein one or more external factors are selected from the group consisting of numerical indicators of conditions external to the organization, numerical indications of prices external to the organization, numerical indications of organization conditions compared to external expectations of organization condition, numerical indications of the organization performance compared to external expectations of organization performance and combinations thereof.

23. A computer implemented organization method, comprising:

establishing a detailed data dictionary as required to define a plurality of cells within a matrix of market value for an organization and a plurality of processing stages,

integrating data representative of an organization from a plurality of organization narrow systems in accordance with the matrix cell definitions,

transforming at least part of said integrated data into an impact summary for each of one or more elements of value and one or more external factors by using a series of models,

transforming said impact summaries and integrated data into a market value matrix that quantifies an impact by item of the elements of value and the external factors on an organization market value by a segment of value by analyzing said organization data with a series of models that use the impact summaries as an input,

identifying one or more scenarios and determining an expected range of values for each impact summary under each scenario, and

simulating an organization financial performance using said matrix and the expected range of values for the impact summaries in order to quantify a total organization risk by item and provide data useful for optionally identifying one or more changes at the item level that will optimize one or more aspects of an organization return for each of one or more scenarios using mixed integer non linear optimization analysis before outputting said element of value

impacts, external factor impacts, total organization risk and identified changes, if any, by item where the method links impact summaries together when they are not independent and optionally identifies one or more item level changes that will optimize a total organization risk and a total organization value.

24. The method of claim 23 where an organization is a single product, a group of products, a division, a company, a multi-company corporation, a value chain or a collaboration.

25. The method of claim 23 where the one or more aspects of organization risk, return and value that are optionally optimized are selected from the group consisting of alliance risk, brand risk, channel risk, contingent liabilities, customer risk, current operation risk, derivative risk, employee risk, enterprise risk, external factor risk, event risk, intellectual property risk, investment risk, market sentiment risk, partnership risk, process risk, production equipment risk, real option risk, vendor risk, alliance return, brand return, channel return, customer return, current operation return, derivative return, employee return, intellectual property return, investment return partnership return, process return, production equipment return, real option return, vendor return, alliance value, brand value, channel value, customer value, current operation value, derivative value, employee value, intellectual property value, investment value, market sentiment value, partnership value, process value, production equipment value, real option value, vendor value and combinations thereof.

26. The method of claim 23 that further comprises implementing the one or more changes in an automated fashion.

27. The method of claim 26 where implementation includes activities that are selected from the group consisting of narrow system changes, changes in operation and combinations thereof.

28. The method of claim 23 wherein the segments of value are selected from the group consisting of current operation, derivatives, investments, market sentiment, real options and combinations thereof.

## **10. Evidence Appendix**

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# Does Stock-Market Data Really Go Back 200 Years?

By JASON ZWEIG



As of June 30, U.S. stocks have underperformed long-term Treasury bonds for the past five, 10, 15, 20 and 25 years.

Still, brokers and financial planners keep reminding us, there's almost never been a 30-year period since 1802 when stocks have underperformed bonds.

These true believers rely on the gospel of "Stocks for the Long Run," the book by finance professor Jeremy Siegel of the Wharton School at the University of Pennsylvania that was first published in 1994.

Using data assembled by other scholars, Prof. Siegel extended the history of U.S. stock returns all the way back to 1802. He came to two conclusions that became articles of faith to millions of investors: Ever since Thomas Jefferson was in the White House, stocks have generated a "remarkably constant" average return of nearly 7% a year after inflation. (Adding inflation at 3% yields the commonly cited 10% annual stock return.) And, declared Prof. Siegel, "the risks of holding stocks decrease over time."

There is just one problem with tracing stock performance all the way back to 1802: It isn't really valid.

Prof. Siegel based his early numbers on data first gathered decades ago by two economists, Walter Buckingham Smith and Arthur Harrison Cole.

For the years 1802 through 1820, Profs. Smith and Cole collected prices on three dozen banking, insurance, transportation and other stocks -- but ended up including only seven, all banks, in their stock-market index. Through 1845, they tracked 19 insurance stocks, but rejected 95% of them, adding only one to their index. For 1834 onward, they added a maximum of 27 railroad stocks.

To be a good measure of stock returns, an index should be comprehensive (by including many stocks) and representative (by including the stocks commonly held by investors). The Smith and Cole indexes are neither, as the professors signaled in their 1935 book, "Fluctuations in American Business." They cherry-picked their indexes by throwing out any stock that didn't survive for the whole period, whose share prices were too hard to find or whose returns seemed "inflexible," "erratic," or "non-typical."

The database of early U.S. securities at EH.net has so far identified more than 1,000 stocks that were listed on 10 different exchanges -- including Charleston, S.C., New Orleans, and Norfolk, Va. -- between 1790 and 1860. Thus the indexes relied on by Prof. Siegel exclude 97% of all the stocks that existed in the earliest years of the U.S. market, and include only the bluest of the blue-chip survivors. Never mind all of the canals, wooden turnpikes, rubber-hat companies and the other doomed stocks that investors lost millions on -- and whose returns may

never be reconstructed.

There is a second problem with Prof. Siegel's data.

In an article published in 1992, he estimated the average annual dividend yield from 1802-1870 at 5.0%. Two years later in his book, it had grown to 6.4% — raising the average annual return in the early years from 5.7% to 7.0% after inflation.

Why does that matter? By using the higher number for the earlier period, Prof. Siegel appears to have raised his estimate of the rate of return for the entire period by about half a percentage point annually.

Prof. Siegel calculated in his 1992 article that \$1 invested in stocks in 1802 would have grown, after inflation, to \$86,100 by 1990. In his book just two years later, however, he estimated that \$1 in 1802 would have mushroomed into \$260,000 by 1992. But in 1991 and 1992, stocks gained 30.5% and 7.6%, respectively, which should have taken the cumulative return up to only about \$121,000. Nearly all of that huge difference seems to have come from Prof. Siegel's revised number for early dividends.

"I made an estimate of the dividend yield," Prof. Siegel told me, "through looking at a smaller set of securities and projecting it out." Money manager Robert Arnott of Research Affiliates LLC has recently estimated the early dividend yield at 5.2%. "Arnott has a much lower estimate, and that's a big difference," said Prof. Siegel. "I mean, I don't know what more to say."

I later called Prof. Siegel to ask him again about the difference between his original research and his book, but he didn't get back to me by press time.

What, then, are the odds that stocks will continue to lag behind bonds for the long run? The sad truth is that history can't tell us the answer. The 1802-to-1870 stock indexes are rotten with methodological flaws. So we have only the period since then, or four distinct and complete 30-year stretches of stock returns, to base our long-term investment decisions on.

Another emperor of the late bull market, it seems, has turned out to have no clothes.

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## Is it back to the Fifties?

By John Authers

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"My mother is 75," said Jon Stewart, the US late-night comedian, at the end of his already famous interview with Jim Cramer, the television stock market pundit. "And she bought into the idea that long-term investing is the way to go. And guess what?"

"It didn't work," replied Mr Cramer.

The interview this month, in which Mr Stewart humiliated his guest, has earned a place in American cultural history. Mr Stewart was articulating a broad sense of betrayal among the populace that the faith all had been told to put in equities had been misplaced.

That loss of faith spreads beyond retail investors. The crash has forced professional investors and academics to question the theoretical underpinnings of modern finance. The most basic assumptions of the investment industry, and the products they offer to the public, must be reconsidered from scratch. Indeed, the very reason for the industry to exist – a belief that experts make the smartest decisions on where people's money will do best – is up for scrutiny as a result.



Invest your tuppence wisely: a father pays out pocket money circa 1955. The children of that era, now at retirement age, are finding their holdings are far short of what they expected

Mr Stewart was right about long-term investment, and not just for septuagenarians. US stocks have fallen more than 60 per cent in real terms since the market peaked in 2000. Anyone who started saving 40 years ago, when the postwar "baby boom" generation was just joining the workforce, has found that stocks have performed no better than 20-year government bonds since then, a forthcoming article by Robert Arnott for the Journal of Indexes shows. These people want to retire soon and the "cult of the equity" has let them down.

To find a period that does produce an outperformance requires a span reaching back a

lot further. The 2009 Credit Suisse *Global Investment Returns Yearbook* shows that since 1900 US stocks have averaged an annual real return of 6 per cent, compared with 2.1 per cent for bonds – while in the UK, equities have beaten gilts with a return of 5.1 per cent against 1.4 per cent. The problem is that they can perform worse than bonds for periods longer than a human working lifetime.

Further, recent experience challenges that basis of modern finance, the "efficient markets hypothesis", which in its strongest form holds that prices of securities always reflect all known information. This implies that stocks will react to each new piece of information, yet without following any set trend – a description that cannot be applied to the events of the past 18 months. On these foundations, theorists worked out ways to measure risk, to put a price on options and other derivatives and to maximise returns for a given level of risk.

This theory also showed that stocks would outperform in the long run. Stocks

Below: how retail investors are modifying their behaviour

are riskier than asset classes such as government bonds (which have a state guarantee), corporate bonds (which have a superior claim on a company's resources) or cash. So the argument was that those who invested in them would in the long run be paid for taking this risk by receiving a higher return. That is now in question.

**11. Related Proceedings Appendix (None)**